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# REGION 5 RAC2

## REMEDIAL ACTION CONTRACT FOR

Remedial, Enforcement Oversight, and  
Non-Time Critical Removal Activities at Sites of Release  
or Threatened Release of Hazardous Substances in Region 5

### FINAL DESIGN

**Eagle Zinc OU1 Site**

Hillsboro, Illinois

US EPA RECORDS CENTER REGION 5



406106

WA No. 101-RDRD-B5Y7/Contract No. EP-S5-06-01

June 2011

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PREPARED FOR

U.S. Environmental Protection Agency



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PREPARED BY

**CH2M HILL**

FOR OFFICIAL USE ONLY

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**TECHNICAL PLAN FOR THE DEMOLITION  
OF BUILDINGS AT THE FORMER EAGLE ZINC FACILITY**

**EAGLE ZINC SITE OPERABLE UNIT 1  
Hillsboro, Illinois**

**Remedial Design**

**WA No. 101-RDRD-B5Y7 / Contract No. EP-S5-06-01**

**June 2011**





1034 S. Brentwood Blvd  
Suite 2300  
St. Louis, MO  
63117  
Tel 314.421.0900  
Fax 314.421.3927

June 24, 2011

Ms. Nefertiti Simmons  
Work Assignment Manager (SR-6J)  
U.S. Environmental Protection Agency  
77 West Jackson Boulevard  
Chicago, IL 60604-3590

Subject: Final Design for OU1 of the Eagle Zinc Site  
Hillsboro, Illinois  
WA No. 101-RDRD-B5Y7/Contract No. EP-S5-06-01

Dear Ms. Nefertiti:

Enclosed are the responses to USEPA comments on the Pre-Final/Final Design and two hard copies and one CD of the Final Design for the Eagle Zinc OU1 Site, located in Hillsboro, Illinois. This document was prepared as part of the Remedial Design Work Assignment Number 101.

If you have any questions or comments regarding this submittal, please contact me at (314) 335-3010. CH2M HILL appreciates the opportunity to work with U.S. Environmental Protection Agency on this project.

Sincerely,

CH2M HILL

A handwritten signature in cursive script that reads "Lisa R. Cundiff".

Lisa Cundiff  
Site Manager

cc: Rick Lanham/IEPA (2 hard copies and one CD)  
Information Repository at the Hillsboro Public Library (1 copy)

Enclosures

## Response to USEPA Comments on the Eagle Zinc OU1 Pre-Final/Final Design Documents

PREPARED FOR: Nefertiti Simmons/USEPA

PREPARED BY: Lisa Cundiff

COPIES: Rick Larham/Illinois EPA  
Louise Amundson/MKE  
Chuck Ouellette/BOS  
Scott Hutsell/LSG

DATE: June 24, 2011

### General Comments:

1. Evaluate whether or not off-site transport can occur using the new rail system near the site. Include cost and difference in carbon foot print.

*Response: The use of rail systems for transport of waste from a site includes several steps:*

1. Loading of materials at the site into trucks for transport to the rail loading/unloading facility
2. Unloading of trucks at the rail facility and loading of rail cars
3. Transport to rail loading/unloading facility near the disposal facility.
4. Unloading from rail cars and loading into trucks
5. Transport from rail loading/unloading facility to the disposal facility

*Rail system transportation is beneficial when a large quantity of material needs to be transported a long distance to a disposal facility.*

*The majority of the materials anticipated to be generated during the demolition of the facility include scrap metal and non-hazardous debris. To maximize the benefit of scrap metal recycle, transportation costs need to be minimized. As such, the scrap metal is planned to be recycled locally. Three local scrap metal recyclers have been identified (see Section 8.0). The non-hazardous debris will be placed in the on-site consolidation cell and not shipped for off-site recycle or disposal.*

*The remaining materials to be disposed off-site include universal waste, asbestos-containing material (ACM), putrescible waste, miscellaneous debris and hazardous process waste and residue. Several local disposal facilities have been identified for each of these waste streams (see Section 7.6). Based on availability of local facilities and the anticipated volumes of these materials, transportation by rail system does not appear to be cost effective.*

### Specific Comments:

#### Technical Plan for the Demolition of Buildings

1. Section 2 – Plant History

- a. The site history information appears to be taken directly from the previous RI/FS, consider updating with the RI/FS work plan.  
**Response: the site history has been revised to reflect the description in the RI/FS work plan.**
- b. Table 2-1 – the gas metering building at the entrance to the site was omitted.  
**Response: This has been added to Table 2-1**
- c. Table 2-3- The large, brick chimney, visible in Appendix B photo # 27, should be included in table 2-3  
**Response: This has been added to Table 2-3**
2. Section 3.1 – Staging Areas
  - a. In this subsection, or somewhere else in the front of the document, it should be explained that Asbestos, although not technically “Hazardous Wastes”, are considered “Hazardous” as Asbestos and regulated under NESHAPS. The references to Asbestos as being “potentially toxic nonhazardous waste” should be rephrased since Asbestos is regulated as a Hazardous Air Pollutant, known to cause the lung disease such, Asbestosis, and is a carcinogen. Although the term NESHAP is defined in Subsection 5.1.2, the document, it is not clearly stated that Asbestos is hazardous.  
**Response: Section 3.1 has been rephrased and Section 5.1.2 has been revised to include a description of asbestos.**
3. Section 4.1.3 – Gas
  - a. This subsection should state that the gas metering building and gas lines will be removed, not just disconnected.  
**Response: Section 4.1.3 has been revised.**
4. Section 4.1.7 – Storm water Sewer
  - a. There needs to be a discussion about the underground, partially collapsed storm water sewer that runs across the site.  
**Response: A discussion has been added to Section 4.1.7 regarding the collapsed area and former storm sewer pipe.**
5. Section 5.1.2 -- Terminology and Definitions
  - a. This subsection should include TSCA, and a definition relative to PCBs.  
**Response: Section 5.1.2 has been revised to include TSCA and a definition of PCBs.**
6. Section 5.1.8 – Emergency Procedures
  - a. This subsection should include more details or a reference to a separate Health and Safety Plan.  
**Response: Section 5.1. 8 had been revised to refer to a separate Health and Safety Plan.**
7. Section 5.2 – Lead
  - a. This subsection should also include information on waste materials contaminated with lead within the buildings.  
**Response: Section 5.2 has been revised to include information on waste materials contaminated with lead.**
8. Section 7.1.9 – PCB Waste
  - a. PCB's and related wastes are regulated as “Toxic” under TSCA. This information should be included, and the definition of TSCA.  
**Response: Section 7.1.9 has been revised to include a definition of TSCA.**
9. Section 8 – Reuse/ Recycling Work Plan
  - a. Table 8.1: Please identify where the materials can go. For instance, what recycling facilities are likely to take the material? Are they local? Etc.  
**Response: Potential Metals Recycling Facilities have been identified and listed.**
10. Section 10 – Demobilization and Closure Plan

- a. When documenting all materials that were reused or recycled in the final report, please discuss the environmental benefit of the recycling and reuse. The calculator for this benefit discussion is available at [epa.gov/warm](http://epa.gov/warm) or [http://www.epa.gov/climatechange/wywd/waste/calculators/Warm\\_home.html](http://www.epa.gov/climatechange/wywd/waste/calculators/Warm_home.html). WARM stands for Waste Reduction Model.

***Response: Section 10 has been revised and a discussion of the environmental benefit of recycling and reuse will be included in the final report.***

#### Basis of Design for Onsite Management Cell

##### 1. Section 2 – Final Remedial Design

- a. 2.1.3 Vegetative Soil Layer – Please identify what native plant will be planted for the vegetative layer. Then modify corresponding specification in Appendix C.

***Response: The vegetative soil layer shall be planted in accordance with technical specification Section 01 57 13 – Temporary Erosion and Sediment Control, Part 2, Permanent Seed. "Seed of those areas where topsoil is to be applied shall be 75 percent Kentucky 31 and 25 percent Annual Ryegrass".***

##### 2. Section 2.3 – Storm water Management

- a. As previously discussed in our telephone conversations, storm water from the planned waste management cell would not flow east from the southern site boundary stream into the southeast pond. The stream flows to the west then north along the southwestern area of the site. Also, storm water entering the southeast pond would eventually flood the entrance to the site. There is a concern with the potential volume of storm water run-off from the waste management cell entering into the creek located on the southern boundary of the site. ~~The stream follows the property boundary west, then north, and then west again where it continues through parts of the City of Hillsboro. The large pond in the southwest part of the site discharges into this stream. During periods of heavy precipitation a considerable amount of water is discharged from the pond and creek, and has the potential of flooding low lying areas of the city, sometimes with a significant storm water surge. Will the runoff from the waste management cell significantly add to the storm water discharge coursing through the city? Will the drainage ditch being designed to connect the waste management cell contribute to a possible storm water surge into the creek?~~

***Response: Storm water calculations have been prepared that show that the post-development flow from the waste management cell and drainage ditch to the existing surface water discharges will be less than the pre-development runoff volumes and flow that are currently experienced at the site. Runoff will not add to the surface water discharge through the city more than is currently being experienced and the drainage ditch will not create a possible storm water surge into the creek. Calculations supporting the post-development and pre-development flow have been added to Appendix D.***

#### Appendix A

##### 1. Section 4 – Communications and Meetings

- a. Table 4.1: There will definitely need to be a public meeting a few weeks prior to mobilization. The meeting will inform the public about the design and what to expect during construction. The meeting will also allow stakeholders to pose questions and concerns. Please include this meeting in the table as "before mobilization".

***Response: A public meeting has been added to the Table 4.1***

##### 2. Section 12 – Quality Control Documentation

- a. Table 12.1: Include a weekly update report to the Work Assignment Manager for EPA. The report should include a list of activities completed, any problems encountered, and the next week's activities.

***Response: Weekly update reporting has been added to Table 12.1***

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## ATTACHMENTS

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# Acronyms and Abbreviations

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ACM	asbestos-containing material
ANSI	American National Standards Institute
BMP	best management practices
BTEX	benzene, toluene, ethyl benzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CIH	certified industrial hygienist
CRZ	Contaminant Reduction Zone
DOT	Department of Transportation
f/cc	fiber per cubic centimeter
ft <sup>2</sup>	square feet
EZ	Exclusion Zone
HSP	Health and Safety Plan
HAZMAT	hazardous materials
HEPA	high-efficiency particulate air
HVAC	Heating, Ventilation, Air-Conditioning
IDPH	Illinois Department of Public Health
IEPA	Illinois Environmental Protection Agency
LBP	lead-based paint
LCRS	leachate collection and removal systems
LDR	Land Disposal Restriction
LUST	leaking underground storage tank
MSDS	material safety data sheet
NESHAP	National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	polychlorinated biphenyl
PPE	personal protective equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
Site	Eagle Zinc Site
STEL	short-term excursion limit
SWPPP	Stormwater Pollution Prevention Plan
SZ	Support Zone
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
USEPA	Environmental Protection Agency
UST	underground storage tank

## SECTION 1

# Introduction

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The Eagle Zinc Site (Site) is located in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. The Site is approximately 132 acres with approximately 30 acres of buildings and associated structures. There are about 23 buildings onsite that were previously used for facility operations; the types of buildings include offices, laboratories, manufacturing/processing, equipment/raw material/finished product storage, bag houses, and maintenance facilities. Also located onsite are railroad spurs, residual materials, two stormwater retention ponds, a small pond, and several roads. Active industrial operations ceased in 2003. The area has been zoned commercial/industrial and there are no plans to rezone the area for other uses.

Previous investigations have taken place since the early 1980s. The initial Remedial Investigation started in 2001, and a draft Remedial Investigation Report was produced in 2005 (Environ, 2005). The previous investigations show multiple residue piles throughout the Site that exceed screening levels provided in the Remedial Investigation Report. The main contaminants of concern onsite include lead and cadmium. Other contaminants onsite include copper, zinc, and manganese. In 2008, the buildings and associated structures onsite were sampled by x-ray fluorescence and revealed significantly high levels of lead concentrations in, on, and around the buildings. The sampling event led to the U.S. Environmental Protection Agency's (USEPA's) decision to perform an interim action to address the immediate threat posed by the buildings. A removal action was conducted in January 2009 to quickly mitigate site access and exposure. The action consisted of fence installation around the most accessible areas of the site.

USEPA divided the site into two operable units (OUs) – OU1 and OU2 – to effectively deal with the short-term risks, elevated lead concentrations in buildings (OU1), and the long-term risks associated with contaminated soil and groundwater onsite (OU2). OU1 building demolition is the focus of this Remedial Design.

The selected remedy for OU1 consists of the following components:

- **Building demolition** – All buildings and associated structures onsite will be removed by controlled demolition.
- **Asbestos-containing material (ACM) abatement** – Any ACM identified in the asbestos survey will be removed and disposed of offsite.
- **Hazardous materials removal** – Any hazardous material such as that containing polychlorinated biphenyls (PCBs) and/or devices or equipment containing mercury will be removed and disposed of offsite.
- **Recycling** – Salvageable material will be recycled or reused. Proceeds from recycling will be used to offset the cost of the remedy.

- **Onsite consolidation** – Remaining nonhazardous debris will be consolidated and placed in the southwest corner of the site.
- **Soil cover** – A 1-foot soil cover will be placed as a barrier over the building debris consolidated onsite.

## 1.1 Purpose and Scope

The overall project objective is to decontaminate and demolish the buildings, tanks, and equipment at the Eagle Zinc Facility in a safe, cost-effective, and environmentally friendly manner. The following regulations and guidelines will be adhered to during the execution of this project:

- U.S. Occupational Safety and Health Administration (OSHA) standards for asbestos and lead abatement.
- Site safety and health standards and procedures.
- 29 *Code of Federal Regulations* (CFR) 1910 – OSHA Standards.
- 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response.
- 29 CFR 1910.1200 – Hazard Communication.
- 29 CFR 1926 – Safety and Health Regulations for Construction.
- USEPA. 1988. *Standard Operating Safety Guides*.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard/USEPA. 1985. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*.
- U.S. Army Corps of Engineers. 2008. *Safety and Health Requirements Manual*. EM 385-1-1. September 15.
- American National Standards Institute (ANSI). Practice for Respiratory Protection, Z88.2 and Demolition Operation-Safety Requirements, A10.6.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104, 106(a), or 107.
- 49 CFR 171 – General Requirements for Transportation of Hazardous Materials.
- 49 CFR 172 – Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements.
- 49 CFR 173 – Shippers – General Requirements for Shipments and Packaging.
- 40 CFR 177 – Carriage by Public Highway.
- Commercial and Public Building Asbestos Abatement Act (225 Illinois Compiled Statutes 207).

- Asbestos Abatement for Public and Private Schools and Commercial and Public Buildings in Illinois (Title 77 Ill. Adm. Code, Part 855).
- Management of Hazardous Wastes (Title 35 Ill Adm. Code, Parts 700-739).
- Management of Special Wastes (Title 35 Ill Adm. Code, Parts 807-810).
- Transporter Rules (Title 35 Ill Adm. Code, Part 809.910).
- Manifesting Rules (Title 35 Ill. Adm. Code, Part 809.501).
- Standards for Universal Waste Management (Title 35 Ill. Adm. Code, Part 848).
- When applicable, demolition work will be accomplished in strict accordance with 29 CFR 1926, Subpart T.
- Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, subcontractor's safety requirements will conform to ANSI A10.6.
- Furnish timely notification of this demolition project to applicable federal, state, regional, and local authorities in accordance with 40 CFR 61, Subpart M.
- Air-Conditioning, Heating, and Refrigeration Institute: Guideline K, Containers for Recovered Non-flammable Fluorocarbon Refrigerants.
- ANSI: A10.6, Safety Requirements for Demolition Operations.
- OSHA: 29 CFR 1926 – Occupational Safety and Health Regulations for Construction.
- USEPA: 40 CFR:
  - Part 61 – National Emission Standards for Hazardous Air Pollutants
  - Part 82 – Protection of Stratospheric Ozone
  - Part 273 – Standards for Universal Waste Management
  - Part 260 – Hazardous Waste Management System: General
  - Part 261 – Identification and listing of hazardous waste
  - Part 262 – Standards Applicable to generators of hazardous waste
  - Part 268 – Land Disposal Restrictions
  - Part 279 – Standards for the Management of Used Oil
  - Part 761 (Toxic Substances Control Act [TSCA]) – Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
- Commercial and Public Building Asbestos Abatement Act (225 Illinois Compiled Statutes 207).
- Asbestos Abatement for Public and Private Schools and Commercial and Public Buildings in Illinois (Title 77 Ill. Adm. Code, Part 855).

- Management of Hazardous Wastes (Title 35 Ill Adm. Code, Parts 700-739).
- Management of Special Wastes (Title 35 Ill Adm. Code, Parts 807-810).
- Transporter rules (Title 35 Ill Adm. Code 809.910).
- Manifesting rules (Title 35 Ill. Adm. Code 809.501).
- Standards for Universal Waste management (35 Ill. Adm. Code, Part 848).
- Waste Acceptance Criteria for the Approved Disposal and Recycling Facilities.

In preparation for the demolition, the following activities have been completed: asbestos, lead, PCB-containing devices/equipment and universal wastes have been identified and quantified for abatement, removal, and disposal; building materials have been sampled and analyzed; and this technical work plan and a safety plan (under separate cover) have been prepared.

This technical plan will address the following:

- Identify buildings, tanks, and equipment planned for demolition.
- Identify utilities requiring termination and removal prior to demolition activities.
- Identify decontamination requirements/procedures required prior to demolition activities.
- Identify the primary roles and responsibilities of each party in the demolition project.
- Identify primary methods to remove various structures, equipment, and utilities.
- Include means for controlling and preventing releases of dusts and other contaminants to the environment, including stormwater pollution prevention.
- Identify the waste and material disposition for each type of waste/material generated during the decontamination and demolition activities.
- Identify waste/material staging and loading areas for each type of demolition material

## 1.2 Technical Plan Format

This technical plan presents the procedures for decontamination and demolition activities at the Eagle Zinc Site. The technical plan is organized as follows:

**Section 1, Introduction**, describes the project location and background, the scope of work and objectives, project organization and management, and project schedule.

**Section 2, Plant History/Description**, describes facility history and description of facilities to be demolished.

**Section 3, Site Preparation**, presents the approach to setting up staging areas and establishing work zones prior to other demolition-related activities.

**Section 4, Utility Plan,** describes utilities that will need to be isolated prior to demolition activities and procedures to be followed during utility isolation, rerouting or removal.

**Section 5, Decontamination Plan,** describes decontamination procedures required for buildings, tanks, and equipment prior to demolition and removal.

**Section 6, Demolition Plan,** describes the facility categories, sequence of activities, facility tracking, preparation for demolition and decommissioning, demolition of facilities, decommissioning of facilities, debris disposition, final site restoration, and final site walk-through.

**Section 7, Waste Management Plan,** presents the approach to identification, characterization, handling, treatment, and disposal of both hazardous and nonhazardous waste generated during field activities.

**Section 8, Reuse/Recycling Plan,** identifies materials for reuse/recycling and evaluates options for handling, processing, and reuse/recycling.

**Section 9, Implementation Schedule,** presents draft schedule for decontamination/demolition activities.

**Section 10, Demobilization and Closure Plan,** describes site restoration, final site walk-through and acceptance, demobilization of personnel and equipment, closure documentation, and project closeout, including the preparation of as-built drawings.

**Appendix A, Hazardous Materials Survey Reports,** presents results from the hazardous materials survey of Eagle Zinc facilities conducted by Environmental Design International, Inc., in August 2010. The reports will be the basis for determining which buildings require asbestos, lead-based paint and universal waste abatement and management prior to demolition and decommissioning.

**Appendix B, Photo Log,** includes photos of buildings, tanks, and equipment to be demolished.

**Appendix C, Basis of Design for Onsite Management Cell,** includes the Prefinal/Final Design for the Onsite Management Cell.

## SECTION 2

# Plant History

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The site is located in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. The site is approximately 132 acres, with about 30 acres of buildings and associated structures. There are about 23 buildings onsite that were previously used for facility operations. Buildings were used as offices, laboratories, bag houses and maintenance facilities and for manufacturing, processing, and equipment/raw material/finished product storage. The site also contains railroad spurs, residual material, two stormwater retention ponds, a small pond, and several roads. Active industrial operations ceased in 2003. The area has been zoned commercial/industrial, and there are no plans to rezone the area for other uses.

## 2.1 Description of Historical Manufacturing Operations

Zinc oxide, which is used in many applications (including the paint and ceramics industries and for agricultural products, rubber products, and cosmetics), was manufactured at the site using both direct and indirect processes. The indirect process reportedly involved the processing of zinc metal in a muffle furnace, while the direct process, which was used until the plant closed in early 2003, involved the processing of zinc ores and stockpiled furnace residues in a rotary kiln furnace. While it is likely that Eagle-Picher, Sherwin-Williams, and Eagle Zinc Company all used the direct process, only Eagle-Picher and Sherwin-Williams used the indirect process (muffle furnace). Residual materials historically generated by the manufacturing operations have included rotary kiln residue, muffle dross, metallic zinc particles, and refractory bricks from the facility's furnaces, and is also referred to as waste material.

Other products historically manufactured at the site include leaded zinc oxide (Eagle-Picher), metallic zinc (Eagle Zinc Company), and sulfuric acid (Eagle-Picher). Sulfuric acid was reportedly manufactured at the site by roasting zinc sulfide to remove the sulfur, with the southwest surface water pond used to provide non-contact cooling water. In addition, by screening stockpiled rotary residues using a rotary screen as well as through other methods, Eagle Zinc Company produced a fine-grained product that is rich in carbon.

The pyrometallurgical process known as the American process involved mixing zinc-bearing feed stocks with anthracite coal at the mix room. The coal was delivered to the site by railcar, and the zinc ore was delivered to the site by railcar and truck. The furnace mix was fed into a natural-gas-fired rotary furnace (8 feet in diameter by 50 feet long) at the Block 2 Furnace Building. The natural gas provided the heat source and the anthracite coal provided a reducing atmosphere to reduce the zinc feed stocks to zinc vapor. The zinc vapor was drawn from the rotary furnace into a refractory brick combustion chamber and combusted to zinc oxide by the addition of ambient air. The zinc oxide, suspended in the vapor stream (products of combustion and air), was drawn into a steel flue and a series of steel cooling loops to cool the zinc oxide and vapor stream before it was collected in a bag house. The residue left in the rotary furnace was expelled from the rotary furnace into the discharge chamber, quenched in water and hauled to a pad for storage. The zinc oxide collected in the bag house was conveyed to the refinery and stored in bins before refining. Based on the physical and chemical properties of the zinc oxide,

bins of zinc oxide were sometimes blended while being refined. The refining process involved conveying the zinc oxide through a natural-gas-fired rotary dryer in which the temperature of the zinc oxide was varied to achieve the desired product characteristics.

Until closure of the plant in early 2003, the Eagle Zinc Company produced two products: zinc oxide by the American process (described above), and a carbon-rich byproduct by a screening process. The facility screened stockpiled rotary residues using a double rotary screen with ¼-inch and 2-inch screen sizes to produce a carbon-rich, fine-grained product. This operation was conducted on a concrete pad located immediately west of the zebra building. Large and medium oversize materials created by this process were stockpiled to the west of the concrete pad.

As part of a pilot project, Eagle Zinc Company also produced zinc oxide using a Waelz Kiln in the Block 3 Building. The Waelz Kiln process feedstock was the furnace residue from Block 2 and other onsite stored residue. The Waelz Kiln operated similarly to the Block 2 process, where the zinc oxide was collected in a bag house and used as a feed for Block 2. The Waelz Kiln was not used after October 2000.

Finally, Eagle Zinc Company conducted a metallic zinc granule process in the zebra building, located in the northern part of the manufacturing plant. Crude zinc granules were conveyed to a Stedman Mill and then screened. The granule product was screened to a desired size fraction. The oversize material (metallic zinc) was collected and shipped offsite to a different zinc processing facility. The undersized fraction was zinc oxide, which was sold in bulk. This operation ceased in September 2001.

## 2.2 Regulatory History

The following information concerning the regulatory history of the site is summarized from the 2005 Remedial Investigation Report (Environ, 2005). The facility was initially listed on the Comprehensive Environmental Response Compensation and Liability Information System on June 1, 1981, as a discovery action initiated during Sherwin-Williams' ownership of the Site.

Sherwin-Williams reportedly filed USEPA form 8900-1, Notification of Hazardous Waste Site, in accordance with Section 103(c) of CERCLA. The completed form indicated that slag had been disposed of on Site property. A Preliminary Assessment was conducted in 1984 by the Illinois Environmental Protection Agency (IEPA) pursuant to CERCLA, which culminated in the submission of a Preliminary Assessment Report to USEPA Region 5. Sampling of residual materials by IEPA in the early 1980s resulted in a determination that the materials were not hazardous waste, and the site was not subject to Resource Conservation and Recovery Act (RCRA) permitting.

In addition to the CERCLA activities described above, IEPA collected several sets of surface water samples between 1980 and 1982 from the southwest stormwater discharge and had them analyzed for metals. Detected concentrations above applicable state surface water quality standards of zinc, iron, lead, and copper in the surface runoff (on one or more occasions) resulted in a Notice of Violation from the IEPA. This reportedly prompted Sherwin-Williams to remove approximately 18,000 tons of residue materials from 10 acres of the site.

A CERCLA Expanded Site Inspection was conducted by IEPA on October 26 and 27, 1993. Site inspection results are summarized in the section below. Based on information provided by

IEPA and as reported in the CERCLA Expanded Site Inspection Report, the USEPA's Chief of Emergency Response for Illinois, Mr. Donald Bruce, determined that the site did not require a time-critical or non-time-critical removal action and that the site property did not pose an immediate threat to human health or the environment.

On May 22, 1998, Eagle Zinc Company entered into an Interim Consent Order with the Illinois Attorney General and IEPA, which contained an interim Site Plan for the following:

- Preparation and submittal of a stormwater pollution prevention plan (SWPPP)
- Sampling of onsite materials
- Sampling of stormwater discharges
- Development and implementation of a groundwater monitoring plan
- Disposal of construction and demolition debris

Pursuant to the Interim Consent Order, a monitoring well installation and groundwater sampling program was conducted, which included the installation and sampling of nine shallow monitoring wells. IEPA representatives collected split samples from the monitoring wells. The investigation culminated in the submission to the IEPA of the March 1999 *Monitoring Well Installation and Ground Water Sampling Interim Report* (Goodwin & Broms, Inc., 1999). Sampling of residual piles and underlying soils was also conducted pursuant to the Interim Consent Order. The results of this investigation, which also included the collection of split samples by IEPA, were submitted to IEPA in a March 1999 report entitled *Interim Report of Residue Sampling and Analysis*.

Based on discharges of stormwater from the site at two point sources, the occurrence of "regulated industrial activities" at the site, and the facility's standard industrial classification code, the site was determined to be subject to National Pollutant Discharge Elimination System (NPDES) stormwater permitting requirements as per 40 CFR 122.26 (b)(14)(ii). An NPDES Notice of Intent was prepared by Eagle Zinc and submitted to the IEPA. On June 20, 2000, IEPA issued NPDES Permit No. IL0074519. The NPDES permit required monthly monitoring of NPDES Outfall 002, preparation and implementation of a SWPPP, and submission of an annual inspection report to IEPA.

A SWPPP was prepared for the site in December 2000. Among the structural improvements and best management practices specified in the SWPPP was the construction of a new stormwater retention system in the northeast area of the site, to allow for settling of runoff prior to discharge to Outfall 002. The stormwater retention system, which consists of a two-cell retention basin, was completed in 2001. Following closure of the plant in early 2003, IEPA issued a public notice of the termination of the facility's NPDES stormwater permit on May 23, 2003, which stated "the facility has closed, all industrial activity has ceased, and the discharges have ceased."

The removal of a 500-gallon gasoline underground storage tank (UST) in April 1998 resulted in the reporting of a leaking UST (LUST) incident to IEPA, because a limited amount of impacted soil was observed in the tank excavation and a pin-size hole was observed in the tank itself. No free-phase gasoline or groundwater was observed in the tank excavation. No contaminated soil was excavated or transported offsite. The location of the former UST is shown in Figure I-2 of the Remedial Investigation Report (Environ, 2005). The monitoring wells used for the UST investigation (MW-A, MW-B, MW-C/G-106, MW-D, and MW-E) are also shown in Figure I-2 of the Remedial Investigation Report.

To address the LUST incident, the following site classification and assessment activities were performed by Goodwin & Broms, Inc., and Philip Services Corporation:

- Screening soil samples collected from soil borings using a photoionization detector
- Collecting a soil sample for laboratory analysis of benzene, toluene, ethyl benzene and xylenes (BTEX)
- Collecting soil samples for particle size analysis
- Installing four new monitoring wells
- Sampling five monitoring wells for BTEX compounds
- Completing slug tests to estimate hydraulic conductivity
- Completion of a well search

Neither the soil sample nor any of the groundwater samples collected from the monitoring wells contained detectable concentrations of BTEX compounds. Based on the results and discussions with IEPA, the LUST incident was classified as low priority and groundwater in the former tank area was monitored periodically for 3 years. As there were no detections of contaminants above applicable groundwater standards, the IEPA issued a No Further Remediation letter for the former UST on August 31, 2004. The groundwater monitoring program associated with the former UST was completed independently from the remedial investigation/feasibility study.

## **2.3 Description of Buildings to be Demolished**

There are 23 buildings onsite that were previously used for facility operations; the types of buildings include offices, laboratories, manufacturing/processing, equipment/raw material/finished product storage, bag houses, and maintenance facilities. Also located onsite are railroad spurs, residual material, two stormwater retention ponds, a small pond, and several roads. Active industrial operations ceased in 2003. The area has been zoned commercial/industrial, and there are no plans to rezone the area for other uses.

A site map showing the location of the buildings at the Eagle Zinc Site is shown in Figure 2-1. The building designations were developed as part of the hazardous material survey. Photographs of the buildings are presented in Appendix B. The buildings (and all equipment within the buildings) scheduled for demolition are shown in Table 2-1.

**TABLE 2-1**

Description of Buildings to be Demolished

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Name	No. of Floors	1st Floor Square Footage	2nd Floor Square Footage	3rd Floor Square Footage	Construction Type	Past Use
Building A	2	10,000	10,000	N/A	Concrete, Steel	Product Storage
Building B	1	9,500*	N/A	N/A	Brick, Tin, Steel	Product Storage
Building C	1	8,280	N/A	N/A	Tin, Steel	Process/Furnace
Building D	1/2/3	59,378	59,378**	7,500	Brick, Concrete, Steel	Process/Fan Houses/Lab/Storage
Building E	2	27,900	27,900	N/A	Concrete, Steel	Process/Zinc Oxide Furnace House/Main Rotary Kiln
Building F	1	1,625	N/A	N/A	Steel	Furnace Room
Building G	1	12,000	N/A	N/A	Steel	Ore Storage
Building H	N/A	15,600	N/A	N/A	Concrete Pad/Walls	Product Storage
Building I	1	1,620*	N/A	N/A	Steel	Process/Baghouse
Building J	1	7,400*	N/A	N/A	Steel, Brick	Process, Large Furnace Inside
Building K	1	6,000*	N/A	N/A	Brick, Steel	Storage
Building L	1	1,600	N/A	N/A	Brick	Chemical Lab
Building M	2	15,000	8,400***	N/A	Brick, Wood, Concrete	Machine Shop Storage, Group Space
Building N	1	5,200	N/A	N/A	Concrete Block, Wood	Office/Labs
Building O	1	1,750	N/A	N/A	Brick, Wood	Unknown
Building P	1	1,500	N/A	N/A	Brick, Wood	Unknown
Building Q	1	N/A	N/A	N/A	N/A	Gas Metering Building

\* Building is single-story; however, it is double height.

\*\* Approximately 15,000 square feet of building's second floor is single-story; however, it is double height (same height as third floor).

\*\*\* Other 6,600 square feet of building is single-story; however, it is double height (same height as second floor).

## 2.4 Description of Tanks to be Demolished

There are currently two aboveground storage tanks that are located at the site. An inventory of the tanks is provided below. Based on Sanborn maps from 1923 and 1961 the tanks reportedly stored sulfuric acid. The tanks are assumed to be empty based on visual observations (such as, open valves near the bottom of the tank) and information provided by Mr. Clarence Smith during the site walk. To verify, the tanks shall be opened at the top and inspected during predemolition activities when equipment and decontamination/support facilities are onsite and the tanks can be safely assessed.

**TABLE 2-2**

Description of Tanks to be Demolished

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

<b>Tank</b>	<b>Diameter (feet)</b>	<b>Height (feet)</b>	<b>Capacity (gallons)</b>
Sulfuric Acid Aboveground Storage Tank	26	20	80,000
Other Aboveground Storage Tank	17	20	34,000

## 2.5 Description of Outside Equipment to be Demolished

Equipment located outside of buildings, which is scheduled for demolition is as shown in Table 2-3.

**TABLE 2-3**

Description of Outside Equipment to be Demolished

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

<b>Name</b>	<b>Location</b>	<b>Material of Construction</b>
Cooling Tower	Between Buildings I and J	Steel
Site Duct Conveyor	Between Buildings E and F	Steel
Large Brick Chimney	Adjacent to Building E	Brick



## SECTION 3

# Site Preparation

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This section describes the site preparation activities that will be completed prior to and during decommissioning and demolition activities at the Eagle Zinc Site. Prior to commencement of site preparation work at the site, work areas and access/haul routes will be delineated. Delineation will continue as an ongoing activity because the work areas will constantly change based on the buildings, tanks, and equipment being demolished.

CH2M HILL personnel will verify that work areas, access/haul routes, and staging areas are coordinated with other site activities to prevent disruption to site operations.

The consolidation cell (see design drawings and specifications) shall be constructed to subgrade to prepare the area for receipt of non-putrescible waste from demolition activities.

## 3.1 Staging Areas

Equipment and material staging areas will be established for the laydown of demolition equipment (including heavy equipment), materials, supplies, and demolition tools. The equipment and material staging areas will be used for storage in support of decommissioning and demolition. Smaller, temporary staging areas will be set up at each facility work area, as necessary. Subcontractors will move equipment, materials, and supplies from the central staging area to each building work area as necessary. A building work area may include a single building or group/cluster of buildings.

Centralized debris stockpiles will be constructed for processing debris for placement into the consolidation cell. Hazardous waste, universal wastes, PCB-containing devices/equipment, and ACM will be staged in containers at a temporary hazardous waste accumulation area(s). ACM is an inhalation hazard and a known carcinogen. The following is a summary of the types of waste stockpiles that may be established in centralized debris areas as a function of final disposition.

### 3.1.1 Offsite Waste Disposal

Staging areas will be established to hold containers of PCB-containing transformers and ballast; universal wastes; petroleum, oil, and lubricant materials; friable and non-friable ACM abatement wastes; hazardous wastes; and other such waste items.

### 3.1.2 Recyclable Metal

Stockpiles will be established for the recycling of metals. Recyclable metal is metal material, equipment, and assemblies that are recovered and transported offsite for recycling. This may include items such as structural beams, columns, decking, siding, and other materials.

### **3.1.3 Non-putrescible Waste**

Non-putrescible waste will be segregated from scrap metal and putrescible waste for processing and placement into the consolidation cell.

### **3.1.4 Putrescible Waste**

Putrescible waste will be segregated from scrap metals and concrete/brick and stockpiled to facilitate loading and hauling for offsite disposal.

### **3.1.5 Miscellaneous Stockpiles**

Additional short-term stockpiles may be necessary at individual facilities or groups of facilities to support the debris sorting operation as well as to facilitate the hauling of materials.

### **3.1.6 Decontamination Water**

Decontamination water will be containerized in a frac tank for sampling and subsequent disposal. Secondary containment will be provided.

Perimeter fencing will be installed with appropriate signage around the staging areas. Where required, stockpiles and staging areas will be lined to prevent water run-on, contain potential water runoff, and prevent inadvertent releases to the environment.

## **3.2 Access and Haul Routes**

Access/haul route options between staging areas and demolition work areas will be established based on the locations of facilities that require demolition or decommissioning. Existing roads should be sufficient and no new road construction is planned. Appropriate signs and engineering controls will be posted along the access/haul roads, indicating traffic patterns.

## **3.3 Work Zone Establishment**

Construction areas will be delineated with highly visible fencing, barriers, and signage. The fenced construction area will be divided into three work zones: a Support Zone (SZ), a Contaminant Reduction Zone (CRZ), and an Exclusion Zone (EZ). Each zone will be delineated using highly visible fencing or other barriers to prevent unauthorized access. Signs will be posted on or adjacent to the zone perimeter fencing in accordance with the Health and Safety Plan (HSP). Each work zone will provide sufficient area for equipment traffic, site workers and construction debris. Work zone areas will be located to minimize impacts on facility activities.

If the designated work area contains facilities where no hazardous material mitigation is required, the subcontractor's site manager and the site safety coordinator may modify the work zone layout by eliminating the CRZ and EZ. Personnel entering any work zone will wear the appropriate personal protective equipment (PPE) as specified in the HSP.

Equipment, material, and supply staging areas, including demolition debris stockpiles, will be located in the SZ. The break areas, portable toilets, and other support facilities, if needed,

will be set up in the SZ. Equipment and personnel decontamination will occur in the CRZ. The equipment decontamination areas will be equipped with pressure-washing equipment and a sump to collect decontamination water.

Demolition and decommissioning activities, ACM abatement, decontamination and waste containerization, will occur in the EZ. Engineering controls including silt fences, haybales, berms, swales, and/or a drainage sump will be constructed in the EZ to manage silt from runoff as necessary. Run-on controls may be constructed to divert stormwater from the work area, if needed. The technologies will be selected based on location of the work area, topography and work activity.

## SECTION 4

# Utilities

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In August 27, 2010, a utility survey was performed at the site by The Underground Detective from Cincinnati, Ohio. Five utilities were identified using ground penetrating radar and staked. Utilities identified were: water, sewer, gas, phone, and a mystery line. The staked utilities were located by global positioning system and plotted (Figure 4-1). The utilities will be isolated/disconnected prior to demolition activities.

## 4.1 Utility Isolation Procedures

Prior to initiating utility isolation, Illinois JULIE will be notified at least 48 hours and not more than 14 days prior to starting work. In addition, stakes previously installed by the Underground Detective, will be inspected. If any stakes have been destroyed or removed, the Underground Detective will be remobilized to reinstall the missing stakes. CH2M HILL will participate in a meeting with the City prior to any demolition activities and coordinate with City staff prior to and during demolition activities.

### 4.1.1 Water

The water line will be excavated at a central location of the site. The line will be cut, capped, and retrofitted with a temporary connection to allow water to be available for use during decontamination/demolition activities. Temporary requirements and metering will be coordinated with the local water utility. Proper lockout/tagout will be performed before the water line is cut. After demolition is complete, the temporary connection will be removed. The water line will then be permanently capped and a thrust block installed prior to backfilling the excavation.

### 4.1.2 Sewer

Sewer lines will be excavated at 5 feet outside the building footprints. Prior to cutting, the line will be tapped to assure the line is not plugged and waste is backed up in the line. After separating the sewer line from the buildings, a minimum 1-foot concrete plug will be installed within the pipe end. The sewer line will also be excavated at the site boundary, separated and plugged with concrete on both sides.

### 4.1.3 Gas

The gas metering building will be demolished and the gas lines will be removed at the entrance to the site. The gas line will be properly disconnected and capped in accordance with Ameren Corporation (gas utility) requirements. Work will be coordinated with Ameren Corporation by subcontractor.

#### **4.1.4 Telephone**

The telephone line to the office building will be removed from the building back to the first utility pole. The disconnection of the phone at the pole will be coordinated with the local phone company.

#### **4.1.5 Mystery Line**

A mystery line was identified during the utility survey. The city engineer (Hurst & Rosche) was contacted and verified that there are no utility drawings to identify the mystery line. Sanborn maps from 1923 and 1961 were obtained and indicate that this line is likely a 5-inch water line. The line will be excavated to determine the pipe size and material and then tapped to identify its potential service. Based on the results, the pipe will be permanently capped as required.

#### **4.1.6 Power**

Power to the site is already terminated, therefore, no power disconnects are needed.

#### **4.1.7 Former Stormwater Sewerline**

The underground stormwater sewer piping that runs across the site is partially collapsed. Based on discussions with the construction staff at the neighboring Lumberyard, the outfall to the creek along the southern border of the property was capped off and covered during reconstruction and placement of rip-rap along the creek embankments.

This former storm sewer piping is not fully functional, and the area that has collapsed will be filled in with dense graded aggregate to match the surrounding grade and compacted.



- Legend**
- Site Boundary
  - Sewer\_GPS\_08\_2010
  - Phone\_Line\_GPS\_08\_2010
  - Mystery\_Line\_GPS\_08\_2010
  - Gas\_Line\_GPS\_08\_2010
  - Water\_Line\_GPS\_08\_2010
  - Sink\_Hole\_GPS\_08\_2010
  - Building
  - Foundation

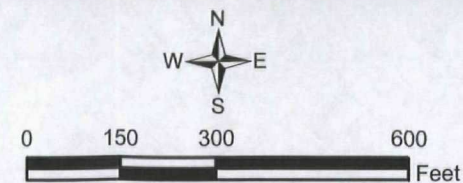


Figure 4-1  
Utility Locations  
Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility  
Hillsboro, Illinois

## SECTION 5

# Decommissioning and Decontamination Plan

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Based upon site visits, surveys, and a review of the plant operating history, an overview of the decommissioning and decontamination activities that must be done prior to demolition for buildings, tanks, equipment, and piping scheduled for demolition is provided in this section. Decommissioning and decontamination activities will include the following:

- Asbestos abatement
- PCB-containing service/equipment removal
- Universal waste removal
- Interior decontamination of buildings
- Interior decontamination of equipment/piping
- Interior decontamination of ventilation ductwork and the related process facilities

Procedures for decontamination activities are described below. Unsafe building sections will undergo partial demolition prior to sampling and decontaminating the equipment/structure.

## 5.1 Asbestos

An asbestos survey was performed by Environmental Design International of Chicago, Illinois, on August 23 through August 27, 2010. An Environmental Design International representative performed a visual inspection of each accessible building to identify suspect ACM. The ACM survey did not include areas that were not visible or accessible due to collapsed ceilings, structurally unsound buildings, other safety or security issues, or that were behind walls or otherwise inaccessible. Samples were collected from suspect ACM material throughout the site. The site layout for the survey is shown in Figure 2-1. The site layout identified Buildings A through P for the survey. Some building groups had more than one building and buildings were labeled D1, D2, D3, etc. Specified ACM in selected interior and/or exterior areas of selected buildings, tanks, equipment, and piping throughout the Site, as defined in Appendix A, will be removed prior to demolition of the buildings. A Summary of Findings, which shows description of the ACM materials, location, percent asbestos, and quantities, is presented in Table 5-1. Additional details are located in Appendix A.

The following materials were determined to be ACM and are assumed ACM for all the buildings: Roofing materials (with the exception of Building N) and window paper covering, caulks and glazings, and door caulks. These ACM building components were generally in poor condition and spread around the footprint of the buildings. Asbestos abatement design and planning must consider the impact of non-intact ACM. These materials would be considered Category I, non-friable asbestos.

The following other ACM were building-specific and included pipe insulation, floor tiles, mastics, and transite:

- Building C (north wall center) – pipe sealant
- Building H2 – air cell pipe insulation
- Building L1 – laboratory tops
- Building M (garage engineer office west) – air cell thermal system insulation
- Building M (break room) – transite ceiling
- Building N (office) – tan, brown, and grey floor tile and mastic
- Building N (office) – transite ceiling panels

These ACM building components were generally intact and in the interior of the building. The ACM is generally in poor condition. The ACM are Category II, friable, and require abatement in containment with negative pressure prior to demolition.

ACM must be abated by an Illinois Department of Public Health (IDPH) licensed subcontractor using IPDH-licensed supervisors and workers, prior to building demolition. A site-specific asbestos abatement design should be prepared under the direction of an IDPH-licensed asbestos project designer.

**TABLE 5-1**  
Summary of Findings  
*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

HAS/Sample No.	Material Description	Location	% Asbestos	Estimated Quantity
A-B-HA5-15	Window asphalt paper	Window coverings on Building B	8.7	Windows: 10-feet by 5-feet 12 windows per side, estimate 50 windows. 2,500 square feet
A-B-HA6-18	Black mastic on metal roof	Roof of tin building at east end of Building B	1.2	Tin Building estimated as 100-feet by 10-feet 1,000 square feet
A-C-HA7-20	Window glazing	Building C	2.8	Estimate 12 windows per side
A-C-HA8-22	Window caulk	Building C	4.2	NA
A-C-HA16-47	Pipe sealant	North wall center, Building C	2.6	3 linear feet
A-D2-HA17-48	Roof sealant	Building D2	25	All roofs D2 to D5
A-D1-HA22-65 & 67	Roof tar	Building D1	1.5 & 2.2	Roof on Building D1
A-D1-HA25-76	Window glazing	Exterior windows on Building D1	3.6	Exterior window glazing on Building D1
A-D1-HA27-82	Roof	Roof at south end of Building D1 at walkway between production building and south end	2.1	NA
A-H2-HA37-114	Pipe insulation—air cell	Building H2	85	10 linear feet

TABLE 5-1

Summary of Findings

Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility

HAS/Sample No.	Material Description	Location	% Asbestos	Estimated Quantity
A-K-HA32-98	Roofing	Building K	1.2	NA
A-L1-HA40-124	Window caulk	Building L1	5.3	200 linear feet
A-L1-HA40-124	Window glazing	Building L1	1.4	NA
A-L1-HA44-136	Door caulk	Building L1	1.3	60 linear feet
A-L1-HA45-139	Lab tops	Building L1 interior	20	Lab tops: 10-feet by 3-feet with 10 in the building 300 square feet
A-L1-HA48-152	Roof	Building L1	4.4	NA
A-M-HA66-210 & 214 & 217	Roof flashing, multiple layers, and caulking	Building M	1.1-1.3	NA
A-M-HA69-219	Thermal system insulation—air cell	Building M—garage engineer office west	55	20 linear feet
A-M-HA70-222	Transite	Building M—break room	25	7,500 square feet (ceiling)
A-M-HA77-244	Door caulk interior	Building M—garage door north	1.7	NA
A-N-HA49-158, 161, 164, & 170	Floor tile and mastic (12-inch by 12-inch)	Building N—office tan, brown, and grey	2.1-10	1,200 square feet
A-N-HA55-176	Transite ceiling panel	Building N—office	20	150 square feet
A-N-HA56-179	Window glazing	Building N—exterior	1.2	NA
A-O-HA59-188	Roof caulk	Building O	15	NA
A-O-HA63-201	Window caulk	Building O—exterior	1.4	NA
A-P1-HA81-257	Window caulk	Building P1	1.5	NA
A-P1-HA82-260	Door caulk	Building P1	3.1	NA
A-P1-HA85-269	Roof	Building P1	5.3	NA

Note: NA = Not available based on the poor condition of the roofs and windows and the extent of the material that could be spread around the buildings.

Roof materials at the following buildings contain ACM: Building B, Building D (D1-D5), Building K, Building L1, Building M, Building O, and Building P. Roof samples from Building N did not have asbestos detections.

Some sampling could not be performed due to a building or portions of a building being structurally unsound or other safety concerns. The safety issues will be addressed, and subsequent asbestos sampling will then be performed to determine if additional ACM is

present and requiring abatement before completing demolition. Samples from the following buildings will be analyzed on a rush-turnaround to minimize schedule impacts:

- Building E was not sampled, due to the collapsed nature of the building. Based on the roof sample results across the site, the roof materials should be assumed ACM Category I, non-friable, for the purpose of demolition planning. Once the collapsed roof materials are removed, building materials and any equipment within the remaining building will be surveyed and sampled.
- Building K interior was not sampled due to the collapsed roof in this area. Based on the roof sample results from Building K roof materials, the roof materials should be managed as ACM Category I, non-friable, for the purpose of demolition planning. Once the collapsed roof materials are removed, the building interior will be surveyed and sampled.
- The southeast corner of Building M was not sampled due to the collapsed roof in this area. Based on the roof sample results from the other portion of the Building M roof materials, the roof materials should be managed as ACM Category I, non-friable, for the purpose of demolition planning. Once the collapsed roof materials are removed, building materials and any equipment within the remaining southeast corner of the building will be surveyed and sampled.
- Building F contained several feet of water on the floor and the interior was not surveyed or sampled. The water will be sampled prior to removal to determine handling requirements. After removal of the water, the building interior will be surveyed and sampled.
- Building N contained broken lab equipment including mercury spill kits. A Lumex was used to screen the interior of the building for evidence of mercury vapors. The north area of the office building was deemed unsafe for sampling by the sampling crew based on the screening results. Additional sampling will be performed to determine if decontamination is required to complete the survey and sampling in this area. If mercury decontamination is required, the building interior will be decontaminated prior to surveying and sampling.

### **5.1.1 Description of Work**

All asbestos removal work will proceed in accordance with the following general procedures. Remove all specified accessible and inaccessible ACM as specified in the following subsections.

1. Prior to the start of asbestos removal work in negative pressure enclosures, all wall and window or other cavities will be completely sealed and protected from residual contamination.
2. All demolition debris will be removed from each work area and properly disposed of as general construction waste.
3. All demolition Work performed to access ACM to be removed will be performed by IDPH-licensed asbestos workers.

4. In the event ACM is likely to be disturbed during selective demolition work, the asbestos subcontractor will be required to perform the demolition work inside a negative pressure enclosure.
5. Wrap and cut removal methods will only be permitted with prior written consent from CH2M HILL's construction manager.
6. Should the subcontractor elect to torch-cut the bolts and pins holding the windows in place, compliance with OSHA 29 CFR 1926.62 will be strictly enforced.
7. The subcontractor will comply with OSHA 29 CFR 1910.146 for confined space entry during all phases of work (e.g., pipe tunnel), when applicable.

### 5.1.2 Terminology and Definitions

The following terms and definitions apply to asbestos removal and handling activities.

**Asbestos**—Asbestos is a group of six different fibrous minerals including amosite, chrysotile, crocidolite, and the fibrous varieties of tremolite, actinolite, and anthophyllite. They occur naturally in soil and rocks in some areas. Asbestos fibers vary in length and may be straight or curled. The fibers are resistant to heat and most chemicals. Asbestos is a known carcinogen. The cancer may be of the lung itself or mesothelioma, which is a cancer of the lining of the lungs or other internal organs. The scarring of the lungs is termed asbestosis. Exposure to asbestos usually occurs by breathing contaminated air in workplaces that make or use asbestos or in the air of buildings containing asbestos that are being torn down or renovated.

**Abatement**—Procedures to control fiber release from ACM, i.e., removal, encapsulation, or enclosure.

**Airlock**—A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two contained doorways at least 6 feet or 2 meters apart.

**Air Monitoring**—The process of measuring the fiber content of a specific volume of air in a stated period of time. Phase contrast microscopy in accordance with NIOSH Method No. 7400 and transmission electron microscopy in accordance with the Asbestos Hazard Emergency Response Act or NIOSH Method No. 7400 are the prescribed methods of sampling and analyses.

**Air Sampling Technician**—A person trained and experienced in air sampling techniques and schemes who performs air sampling under the direction of the third party oversight firm's project manager or certified industrial hygienist (CIH).

**Amended Water**—Water to which a surfactant has been added.

**Third Party Oversight Project Manager/Consultant**—An individual qualified by virtue of experience and education, designated as CH2M HILL's representative and responsible for supervising the Air Sampling Technician and helping to ensure compliance with the specifications and all applicable federal, state, and local laws and regulations.

**Asbestos Hazard Emergency Response Act**—Congressional Act that requires local education agencies to identify friable and non-friable asbestos-containing building materials in public

and private elementary and secondary schools; submit management plans to the Governor of their state; implement management plans in a timely manner; and maintain complete record keeping of any action involving the disturbance of asbestos-containing building materials.

**Authorized Visitor** – The owner or his/her representatives, air sampling technician, third party oversight project manager, consultant, or a representative of any regulatory or other agency having jurisdiction over the project.

**Barrier** – Plastic sheeting and/or other materials used along with the floors, ceilings, and walls of a structure to form an isolated work environment that separates the contaminated work area from the uncontaminated area.

**Bridging Encapsulant** – A liquid designed to form a tough membrane over the surface of ACM.

**Clean Room** – An uncontaminated area or room that is part of the workers' decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.

**Competent Person** – A subcontractor's employee (typically the foreman or superintendent) by virtue of his/her education and experience who is capable of operating an asbestos abatement project in accordance with the specifications and current USEPA, OSHA, and Department of Transportation regulations. Duties of the competent person are as defined in OSHA 29 CFR 1926.1101.

**Consultant** – A CIH, the designated third party oversight project manager, or an environmental technician under the supervision of the CIH or the third-party oversight project manager.

**Contaminated** – Containing or coated with asbestos.

**Curtained Doorway** – A device to allow ingress or egress from one room to another while minimizing air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily formed doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Two curtained doorways spaced a minimum of 6 feet or 2 meters apart from an airlock.

**Decontamination Enclosure System** – A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains at least one airlock.

**Encapsulant** – A liquid material that can be applied to ACM or cleaned substrates following the removal of ACM to control the possible release of residual asbestos fibers by creating a membrane over the surface.

**Encapsulation** – All herein specified procedures necessary to coat ACM with a penetrating or bridging encapsulant to control the possible release of asbestos fibers into the ambient air.

**Equipment Decontamination Enclosure System** – A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the work area, a washroom, a holding area, and an uncontaminated area.

**Equipment Room**— A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

**Facility Component**— Any pipe, duct, furnace, tank, fan, engines, or furnace at or in a facility, or any structural member of a facility.

**Fixed Object**— A piece of equipment or furniture in the work area that cannot be removed from the work area.

**Glove Bag Technique**— A method with limited applications for removing small amounts of ACM from heating, ventilation, and air-conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other nonlinear surfaces in an uncontaminated (plasticized) work area. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6-millimeter transparent plastic); two inward-projecting, long-sleeve, rubber gloves; one inward-projecting water wand sleeve; an internal tool pouch; and an attached, labeled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process. All workers who are permitted to use the glove bag technique must be highly trained, experienced, and skilled in this method.

**HEPA Filter**— A high-efficiency particulate air (absolute) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 micrometer in length.

**HEPA Vacuum**— High-efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be 99.97 percent efficient for retaining 0.3-micrometer particles or larger.

**Holding Area**— A chamber between the washroom and an uncontaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.

**Major Renovation Area**— Will mean that in areas of major renovation as determined by the architect, the contractor will attempt to remove all specified ACM in the area, including but not limited to, demolition to gain access to hidden materials.

**Minor Renovation Area**— Will mean that in areas of minor renovation as determined by the architect, the contractor will only remove the ACM that is readily accessible as listed in Appendix A.

**Movable Object**— A piece of equipment or furniture in the work area that can be removed from the work area.

**Negative Pressure Ventilation System**— A local exhaust system capable of maintaining a detectable pressure differential across containment barriers relative to adjacent unsealed areas.

**NESHAP**— The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

**NIOSH**— The National Institute for Occupational Safety and Health.

**OSHA**— Occupational Safety and Health Administration.

**Penetrating Encapsulant**— A liquid designed to saturate the material, thereby binding asbestos fibers to one another and to other substances in the material.

**Plasticized**— To cover floors, walls, etc., with plastic sheets as specified in this report.

**Removal**— All herein specified procedures necessary to strip or clean up ACM from designated areas and to dispose of the materials at an acceptable disposal site.

**Shower Room**— A room between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas.

**Staging Area**— Either the holding area or an area near the waste-transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

**Stripping**— All herein specified procedures necessary to remove ACM or to remove ACM from their substrate or from any component of the facility.

**Substrate**— The underlying surface or material (piping, duct, furnaces, tanks, chase floors, etc.) to which ACM has been applied.

**Surfactant**— A chemical wetting agent added to water to improve penetration.

**Thermal System Insulation**— Insulation used to prevent heat loss from pipes, furnaces, tanks, breeching, heat exchangers, etc.

**TSCA**— The Toxic Substances Control Act (TSCA), passed in 1976, is the federal statute under which the storage, use, treatment, and disposal of PCBs are regulated

**Washroom**— A room between the work area and the holding area in the equipment decontamination enclosure system. A washroom comprises an airlock.

**Wet Cleaning**— The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools that have been dampened with water, and then disposing of these cleaning tools as asbestos-contaminated waste.

**Work Area**— Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may be contaminated as a result of such abatement actions. A contained work area is one that has been sealed, plasticized, and equipped with a decontamination enclosure system. An isolated work area is a controlled-access work area that has been isolated by plastic curtains and in which the openings to the outside are sealed with plastic sheeting. An isolated work area is not an airtight containment area.

**Worker Decontamination Enclosure System**— A decontamination enclosure system for workers, typically consisting of a clean room, a shower room, and an equipment room.

### 5.1.3 Applicable Reference Documents

The current issue of each reference document will govern. If there is a conflict among requirements or with these specifications, the more stringent requirement will apply.

## Regulations

Compliance is required in strict accordance with the following applicable federal, state, and local regulations.

- 29 CFR 1910.1001, General Industry Standard for Asbestos
- 29 CFR 1926.1101, Construction Industry Standard for Asbestos
- 29 CFR 1910.134, General Industry Standard for Respiratory Protection
- 29 CFR 1910.145, General Industry Standard for Confined Space Entry
- 29 CFR 1926.59, Construction Industry Standard for Hazard Communication
- 29 CFR 1926.62, Construction Industry Standard for Lead
- 29 CFR 1910.1200, General Industry Standard for Hazard Communication
- Title 29, Section 1910.1000, Occupational Safety and Health Standards
- Title 29, Section 1910.120, Hazardous Waste Operations and Emergency Response
- 40 CFR 61, Subpart M
- 40 CFR 763, Asbestos
- Illinois Code of State Regulations 225 Illinois Compiled Statutes 207
- Illinois Code of State Regulations 77 Ill. Admin Code 855
- Title 49, CFR, Hazardous Materials Transportation Regulations, U.S. Department of Transportation (DOT)

## Guidance Documents

USEPA. 1979a. *Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 1*. Office of Toxic Substances, Washington, D.C.

USEPA. 1979b. *Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 2*. Office of Toxic Substances, Washington, D.C.

USEPA. 1983. *Guidance for Controlling Friable Asbestos-Containing Materials in Buildings: Washington, D.C.* Office of Pesticides and Toxic Substances.

USEPA. 1985a. *Guidance for Controlling Asbestos-Containing Materials in Buildings: Washington, D.C.* Office of Pesticides and Toxic Substances.

USEPA. 1985b. *Measuring Airborne Asbestos Following an Abatement Action: Washington, D. C.* Office of Pesticides and Toxic Substances.

USEPA. 1985c. *Asbestos Waste Management/Guidance: Generation, Transport, and Disposal: Washington, D.C.* Office of Solid Waste.

## Codes and Standards

ANSI Z 9.2, Fundamentals Governing the Design and Operation of Local Exhaust Systems.

National Electric Code. Any work involving electrical equipment in a facility will be performed in strict accordance with the National Electric Code.

## Notifications

CH2M HILL will supply written notification of proposed asbestos work not fewer than 10 business days prior to project commencement with copies to the USEPA's representatives

and regulatory agencies with jurisdiction over this project, including, but not limited to, the following:

**Illinois Environmental Protection Agency**

P.O. Box 19276, Mail Code #41

Springfield, IL 62794-9276

Telephone: (217) 785-2011

Fax: (217) 782-1875

**Illinois Department of Public Health**

525 W. Jefferson Street

Springfield, IL 62761

Telephone: (217) 782-4977

Fax (217) 785-5897

### **5.1.4 Air Monitoring**

The performance and execution of the work will be closely and continuously monitored by the third party oversight firm representatives. Full cooperation and support will be provided to the third party oversight project manager and his/her representatives throughout the asbestos removal project.

Third party oversight firm representatives will conduct personal and excursion air monitoring throughout the preparation, removal, and decontamination phases of this project as specified in Table 5-2. Air monitoring will be conducted to ensure compliance with OSHA 29 CFR 1926.1101 and 29 CFR 1926.62 and to evaluate the adequacy of (1) the type of respiratory protection used by workers, (2) work practices and engineering controls, and (3) containment barriers and decontamination procedures. The subcontractor will submit all samples for analysis to a laboratory that is state-licensed and accredited by the American Industrial Hygiene Association.

The subcontractor or their representative is responsible for monitoring personnel as specified by OSHA 29 CFR 1926.1101 and 29 CFR 1926.62. The person or party responsible for the collection of air samples will be technically competent to perform the work and experienced in the prescribed procedures for collecting representative air samples.

### **Exposure Monitoring Schedule**

At a minimum, the subcontractor's exposure monitoring schedule and sampling strategy for each distinct work area per facility will be as indicated in Table 5-2.

**TABLE 5-2**  
**Asbestos Exposure Monitoring Schedule**  
*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Phase of Abatement Project	When to Sample	Type of Sample	Minimum # of Employees	Location
Preparation	Each day of operation	Personal	1*	Per work area
During Cleaning and preparation of work area		Excursion	1*	Per work area
Removal	Each day of operation	Personal	1*	Per work area
		Excursion	1*	Per work area
Decontamination	Each day of operation	Personal	1*	Per work area
		Excursion	1*	Per work area

\*At a minimum, 1 out of 4 workers involved in asbestos abatement activities will be monitored during all preparation, gross removal, decontamination, and load-out phases of this project. Short-term excursion limit (STEL) samples will also be collected per activity and/or at the request of the Environmental Project Manager and his/her representatives. Two types of samples will be collected: personal and excursion. The personal samples are collected on personnel performing abatement over the entire work shift for the time-weighted average. The excursion sample is for monitoring the STEL. It is collected within the abatement area for a 30-minute period, and the results are compared to the STEL of 1.0 fibers per cubic centimeter. This sampling is used to confirm that abatement procedures (sufficiently wetting asbestos, proper ventilation/filtration, etc.) are effective.

### Methods of Collection and Analysis

All exposure monitoring will be conducted in accordance with OSHA 29 CFR 1926.1101 and 29 CFR 1926.62. The recommended sampling period will be 7 to eight 8 hours, except on abbreviated work shifts. The flow rate for the sampling pump will be 0.5 to 2.5 liters per minute for asbestos. Sampling pumps will be checked daily by the subcontractor at the beginning and end of each sample duration for proper flow rate calibration.

All samples and their data sheets collected by the subcontractor or his representative will be submitted to a state-licensed laboratory for polarized light microscopy analysis after completion of daily abatement activities. Sampling results will be reported to the subcontractor and posted onsite within 2 hours upon laboratory receipt.

The minimum number of employees/areas to monitor indicated in Table 5-2 will not be interpreted as the total number of samples to be collected and analyzed each day. Multiple personal or area samples may have to be collected during the 7- to 8-hour work shift to accurately characterize a worker's exposure level. The number of samples collected will depend on the degree of fiber contamination in the work area and the effectiveness of work practices and engineering controls. Overloaded filter samples or filter holder cassettes containing loose particulate matter are unacceptable. All air samples will be properly collected and be representative of actual fiber concentrations in the work area.

### 5.1.5 Personnel Protection

Prior to commencement of this project, all workers will be instructed and will be made knowledgeable of the requirements of this work plan. All workers will be provided with personally issued and marked respiratory equipment approved by NIOSH and suitable for the asbestos exposure level in each work area according to OSHA 29 CFR 1926.1101. All employees will be quantitatively fit-tested prior the beginning any abatement activities. At a minimum, all workers performing asbestos abatement activities will wear powered air-purifying respirators equipped with P-100 HEPA filter cartridges. Single-use or reusable

disposable respirators are not acceptable and will not be used on this project. Sufficient filter cartridges or pads for replacement will be provided as required by the worker, applicable regulations, or as bound into this work plan. If a prevalent airborne fiber concentration inside any asbestos work area exceeds 1 fiber per cubic centimeter (f/cc) over the time weighted average (8-hour shift), the subcontractor will stop work and implement the following:

- Use full-face Type C air-supplied respirators in positive pressure demand or constant flow. All air hose connections will be equipped with a HEPA-filtered disconnect system in the event of compressor failure or the exhaustion of air in the reserve tanks. At a minimum, Type C air supply will provide the following:
  - A continuous sufficient supply of air
  - Supplied air that meets Grade D requirements as specified by Compressed Gas Association
  - An adequate volume of air to allow for escape from the work area
  - Worker comfort and safety
  - NIOSH-approved respirators and supply hoses

Compressed air systems will be designed to provide air volumes and pressures to accommodate respirator manufacturer's specifications. Only breathing air compressors will be used and may be either gasoline or electric powered; however, electric-powered compressors are preferred. The compressor will also be equipped with in-line air purifying absorbent beds and filters that remove moisture, odors, oils, hydrocarbons, heat, and carbon monoxide. The compressor will be equipped with a carbon monoxide monitor and will be checked daily as specified by the manufacturer. The carbon monoxide monitor should be equipped with a visible and audible alarm to alert the operator of a high carbon monoxide level in the supply air. The compressed air system will also be equipped with a reserve tank or reservoir. The volume of air in the reserve tank should provide for adequate escape time for employees in the work area. All Type C air line respiratory equipment will be approved as an entire unit by NIOSH, which includes respirator face piece, regulator, and airline. Any alteration of the respirator or subcomponents is strictly forbidden and voids any approval by NIOSH.

### **5.1.6 Engineering Controls for Airborne Asbestos Fibers**

Per OSHA 29 CFR 1926.1101 and 29 CFR 1926.62, workers will be provided with sufficient sets of protective full-body clothing. Such clothing will consist of full-body coveralls, rubber gloves, face shields, vented goggles, and headgear. Eye protection, full body harness and lanyard, steel-toe safety shoes, and hard hats will be provided as required by applicable safety regulations. Non-disposable protective clothing and footwear will be left in the contaminated equipment room until the end of the abatement work, at which time such items will be properly disposed of. Disposable protective clothing, headgear, and footwear will be provided as needed and/or requested by the environmental project manager.

Authorized visitors will be provided with suitable respirators with new filters or cartridges and protective clothing, headgear, eye protection, safety belts, and footwear, as described below, whenever they are required to enter the work area, to a maximum of three sets per day.

The subcontractor will provide and prominently post the decontamination and work practices to be followed by workers in the clean/change area. Each worker and authorized visitor will, prior to entering the work area, remove street clothes in the clean change room and don the required respiratory equipment and clean protective clothing before entering the decontamination chamber entrance to the work area.

Each worker and authorized visitor will, each time he/she leaves the work area, remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except respirators; still wearing the respirator, proceed naked to the showers; clean the outside of the respirator with soap and water while showering; remove the respirator; thoroughly shampoo and wash himself/herself; if the filters require replacement, remove filters, wet them, and dispose of them in the container provided for the purpose; and wash and rinse the inside of the respirator face piece.

Following showering and drying off, each worker and authorized visitor will proceed directly to the clean change room and dress in clean clothes at the end of each day's work, or before eating or drinking. Before re-entering the work area from the clean change room, each worker and authorized visitor will put on a clean respirator with filters and will dress in clean protective clothing.

Contaminated work footwear will be stored in the equipment room when not in use in the work area. After the asbestos and lead abatement process is completed, footwear will be disposed of as contaminated waste or cleaned thoroughly inside and out with soap and water before being removed from the work area. Contaminated protective clothing will be stored in the equipment room for reuse or placed in receptacles for disposal with other asbestos-contaminated materials.

Workers removing waste containers from the equipment decontamination enclosure will enter the holding area from outside wearing a respirator and dressed in clean coveralls. Workers will not use this system as a means to leave or enter the work area.

Workers will be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos or lead-containing or contaminated material, and until final cleanup is completed and approved.

### **5.1.7 Equipment Removal Procedures**

External surfaces of contaminated containers and equipment will be thoroughly cleaned by wet mopping or using a HEPA-filtered vacuum before moving such items into the decontamination enclosure system washroom for final cleaning and removal to uncontaminated areas. Personnel will not leave work areas through the equipment decontamination enclosure system. Decontamination water and material removed by vacuum will be containerized, sampled and properly disposed.

### **5.1.8 Emergency Precautions**

CH2M HILL will establish (and clearly mark) emergency and fire exits from the work area, and employees will be trained in evacuation procedures in the event of work area emergencies. Emergency procedures will be in written form and prominently posted in the clean change room immediately outside the worker decontamination enclosure system. These procedures will be detailed in a separate Health and Safety Plan developed for execution of the work.

For non-life-threatening situations, employees injured or otherwise incapacitated will decontaminate themselves following normal procedures with assistance from fellow workers, if necessary, before exiting the work area to obtain proper medical treatment.

For life-threatening injury, worker decontamination will take least priority after measures to stabilize the injured worker, remove him or her from the work area, and secure proper medical treatment.

Before subcontractor starts abatement activities, CH2M HILL will inform the local police and fire departments of the danger of entering a contaminated work area. CH2M HILL will make every effort to help these agencies form plans of action should their personnel need to enter contaminated work areas, and to assist during emergencies.

Telephone numbers of all emergency response personnel will be prominently posted in the clean/change room outside the worker decontamination enclosure system along with location of the nearest telephone.

### **5.1.9 Site Security**

The subcontractor will post warning signs at designated entrances to each asbestos and lead work area as required by OSHA 29 CFR 1926.1101 and 29 CFR 1926.62.

Entry into the work area by unauthorized individuals will be reported immediately to CH2M HILL's representative by the subcontractor. The subcontractor will maintain a sign-in sheet for all visitors to each abatement site.

The subcontractor will have control of site security at all times during abatement activities in order to protect work efforts and equipment.

### **5.1.10 Materials and Equipment**

All materials will be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. A submittal detailing proposed materials will be provided to CH2M HILL for approval prior to material delivery. Material will be inspected by CH2M HILL for confirmation on the specification requirements. Material safety data sheets (MSDSs) will be required for all materials brought onsite by the subcontractor.

All materials subject to damage will be stored off the ground, away from wet or damp surfaces, and under sufficient cover to prevent damage or contamination.

Damaged or deteriorating materials will not be used and will be removed from the premises. Material that becomes contaminated with asbestos will be disposed of in accordance with these specifications.

### **Plastic Sheeting**

All plastic sheeting (minimum of 6 millimeters) will be sized in appropriate lengths and widths to minimize the frequency of joints. Plastic sheeting used for worker decontamination enclosure systems will be opaque or black in color.

### **Tape**

Must be capable of sealing joints of adjacent plastic sheets (6 millimeters), capable of attaching plastic sheets to finished or unfinished surfaces of dissimilar materials, and capable of adhering under dry and wet conditions, including use of amended water.

**NOTE:** Paper-type masking tape will not be allowed on this project.

### **Surfactant**

A surfactant will consist of 50 percent polyoxyethylene ether and 50 percent polyoxyethylene ester, or equivalent, and will be mixed with water to provide a concentration of 1 ounce surfactant to 5 gallons of water, or according to manufacturer's specifications.

### **Impermeable Containers**

Impermeable containers must be suitable for receiving and retaining any asbestos-containing or contaminated materials. Metal or fiber drums (must be DOT-approved) with tight-fitting lids are required for all metal-containing wastes (i.e., metal lathe, wire, metal jackets, etc.). Plastic bags, 6 millimeters thick, are acceptable for friable asbestos and fiberglass insulation without metal components capable of penetrating the bags. The containers will be labeled in accordance with OSHA 29 CFR 1926.1101, USEPA 49 CFR Parts 171 and 172 and USEPA 40 CFR Part 61, Subpart M. Containers will be both air- and watertight.

### **Encapsulants**

Encapsulating sealants will be bridging or penetrating sealants compatible with substrates requiring application. Encapsulants selected for use by the subcontractor will be one demonstrating effective performance under the tests conducted by Battelle Laboratories, and will have the following qualities:

- Will not add any toxic substances and will not break down under direct flame impingement to release any toxic gases or an undue amount of smoke.
- Will be capable of adhering to the substrate surface.
- Will be applied with minimum effort and skill.
- Will have impact resistance, flexibility, and resistance to penetration to withstand physical contact.
- Will be water insoluble when cured.

- Will be nontoxic and free of toxic fumes during application.
- Will have sufficient aging characteristics to withstand normal atmospheric changes for a minimum of 6 years and still have sufficient surface integrity to allow recoating.

### **Warning Labels and Signs**

As required by OSHA 29 CFR 1926.1101.

### **Glove Bags**

Glove bags will be made of 6-millimeter-thick plastic and will be seamless at the bottom as specified in OSHA 29 CFR 1926.1101.

### **Plexiglass**

The subcontractor will install plexiglass partitions in doorways or openings adjacent to an asbestos abatement work area, when feasible, to enable asbestos abatement activities to be observed by the owner's representatives and/or other visitors without entering the work area. The plexiglass partitions will be a minimum of 2-feet by 2-feet. CH2M HILL will determine the number of plexiglass partitions to be used.

### **Other Materials**

The subcontractor will provide all other materials, such as lumber, nails, and hardware that may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

## **5.1.11 Equipment**

The subcontractor will provide equipment suitable for asbestos abatement projects. All abatement equipment (i.e., scrapers, air filtration devices, scaffolding, etc.) delivered onsite must be free of asbestos contamination. Should the owner or third party oversight representative suspect asbestos contamination on any piece of equipment, the subcontractor will immediately wrap the equipment in two layers of 6-millimeter poly prior to proceeding to the decontamination chamber. In the event of discrepancies concerning the content of the contamination (i.e., asbestos versus non-asbestos), the subcontractor will bear the full expense of surface tape and or wipe sampling performed by CH2M HILL and/or third party oversight representative.

### **Air Movement Equipment**

High-efficiency particulate air (absolute) filtration equipment will be in compliance with ANSI Z 9.2, Local Exhaust Ventilation. No air movement system or air equipment will discharge asbestos fibers outside the work area into the building.

A measurable air pressure differential will be established in the work area by means of mechanical exhaust equipment (air filtration devices) in order to keep airborne fibers confined to the work area, decrease humidity and temperature, reduce fiber levels in the work area, and achieve acceptable final air monitoring results. The mechanical equipment will exhaust through a HEPA filter and supported, semirigid discharge duct to the outside

of the building. The equipment will remain in operation 24 hours per day until decontamination of the work area and final air sampling and analysis is completed.

### **Airless Sprayer**

An airless sprayer will be used for the application of amended water and encapsulant.

### **Scaffolding and Ladders**

Scaffolding and ladders will be used as required to accomplish the work specified and will meet or exceed all applicable safety regulations.

### **Vacuums**

Vacuums used to clean up ACM or lead dust in all work areas will be equipped with HEPA filters.

### **Miscellaneous Tools and Equipment**

The subcontractor will provide all other tools suitable for the stripping, removal, encapsulation and replacement of thermal insulating materials. The tools include, but are not limited to, scrapers, wire cutters, brushes, sprayers, sponges, utility knives, flexible wire saws, shovels, and brooms.

### **Digital Pressure Differential Meter**

The subcontractor will install a digital pressure differential gauge with a strip chart recorder to continuously measure the pressure differential between the clean area and work area. A pressure differential meter will be required for each work area.

### **Use of Owner's Tools and Equipment**

Tools or equipment of the owner will not be used by the subcontractor, unless permission in writing is granted by the owner's representatives.

## **5.1.12 Execution**

### **Work Area Sequence of Execution Inside Contained Work Areas**

The sequence of execution for asbestos abatement inside contained work areas will occur in the following order:

1. Prepare the work area as described below.
2. Strip and remove asbestos-containing or contaminated materials in the specified below.
3. Remove and discard asbestos-containing waste generated from abatement activities.
4. Removal and disposal of all asbestos-containing materials will be performed concurrently with stripping.
5. Decontaminate and clean work area as described below.
6. Encapsulate building surfaces with an approved sealant as specified below.
7. Establish final clearance criteria for each work area as indicated below.

8. Reestablish building systems in proper working order or as originally found.

### **Work Area Sequence of Execution Inside Regulated Work Areas**

The sequence of execution for asbestos abatement inside regulated work areas will occur in the following order:

1. Prepare all work areas as indicated in the following subsection.
2. Strip and remove ACM in designated areas per instructions below.
3. Remove and discard asbestos-containing waste generated from abatement activities. Removal and disposal of ACM will be performed concurrently with the stripping.
4. Decontaminate and clean work area per instructions below.
5. Encapsulate building surfaces with an approved sealant.
6. Establish final clearance criteria for each work area as indicated below.

### **Work Area Preparation**

Prepare each work area according to the following guidelines:

1. Shut down and lock out electric power to all work areas where applicable. Provide temporary power and lighting and ensure safe installation of temporary power services and equipment, as specified in applicable electrical code requirements when adequate lighting is not available. At a minimum, one 200-watt halogen light per every 500 square feet (ft<sup>2</sup>) will be provided in common space work areas (i.e., class rooms, hallways, etc.). Provide ground-fault interrupt circuits as a power source for electrical equipment.
2. Shut down and isolate heating, cooling, and ventilating air systems such as, but not limited to, fans, air handlers, and unit ventilators to prevent contamination of the units and fiber dispersion to other areas of the structure. Seal all electrical components and equipment tightly to prevent moisture or water damage. During the work, vents within the work area will be sealed with tape and 6-millimeter plastic sheeting.
3. The subcontractor will be responsible for the removal and decontamination of any movable equipment that may be contaminated.
4. Install HEPA-filtered air movement into the work area and vent exhaust ducts through openings to the outside of the facility. Seal openings around exhaust ducts. Exhaust from the negative air movement equipment will not be allowed to be released within the facility. All HEPA-filtered air movement equipment will be maintained as indicated herein.
5. Introduce scaffolding, ladders, and other large equipment into the work area and install the worker and equipment decontamination enclosure systems. Once the decontamination enclosure systems are in place, they will be used as specified for the entrance and exit of all personnel and equipment.
6. Seal off all openings (including but not limited to corridors, doorways, windows, skylight, ducts, grilles, diffusers, and any other penetrations of the work area) with

plywood and/or 6-millimeter plastic sheeting sealed with tape. Doorways and corridors that will not be used for passage during work will be sealed with barriers.

7. Preclean contaminated movable objects (such as desks and chairs, etc.) within the work area using HEPA-filtered vacuums and wet-cleaning methods. Remove the decontaminated furniture from the work area and store in an uncontaminated area of the facility.
8. Preclean fixed objects within the proposed work area (such as but not limited to shelving, bookcases, hot-water heaters, pumps, radiators, unit ventilators, fans, ductwork, and motors) using HEPA filtered vacuums and/or wet cleaning methods as appropriate, and enclose with 4-millimeter (minimum) plastic sheeting sealed with tape.
9. Remove and wet wipe and/or HEPA vacuum ceiling-mounted objects (such as lights, speakers, and other items not previously sealed off) that interfere with asbestos abatement activities. Any item remaining in the work area will be enclosed with 6-millimeter plastic sheeting sealed with tape.
10. For all contained work areas, excluding floor tile and mastic removal only work areas, cover all floors with a minimum of two layers of 6-millimeter plastic sheeting sealed with tape. Cover floors with plastic extending at least 12 inches up on all walls. Cover all walls with a minimum of one layer of 4-millimeter plastic sheeting and overlap floors sheeting by at least 24 inches. Install a 6-millimeter poly drop cloth 20 feet out from each side of the work area undergoing asbestos abatement in all work areas. In addition, drop cloths with a minimum thickness of 6-millimeters will be installed in all staging areas and commonly traveled areas. Seal all joints with tape and/or spray adhesive. The owner will approve the location and methods of attachment of plastic sheeting to finished surfaces in advance.

### **Decontamination Enclosure Systems**

Suitable framing will be built and/or existing rooms connected with framed-in tunnels will be used, if necessary, and will be lined with 6-millimeter plastic sealed with tape at all lap joints for all enclosures and decontamination enclosure systems rooms. Either existing rooms outside of the work area or specially framed and sealed temporary areas will be used for the decontamination enclosure system. Convenience and proximity to the work area will be the determining factors. In all cases, access between contaminated and uncontaminated rooms or areas will be through an airlock, as described above.

A worker decontamination enclosure system will be constructed contiguous to the work area that consists of three totally enclosed chambers as follows:

- An equipment room with two curtained doorways: one to the work area and one to the shower room.
- A shower room with two curtained doorways: one to the equipment room and one to the clean room. One shower will be provided for every 10 workers or fraction thereof as required by OSHA 29 CFR 1910.141(d)(3). To ensure against potential leakage, a metal pan with a minimum 3-inch lip will be installed underneath each shower facility. Ensure soap is available at all times in the shower room. The shower wastewater will be drained, collected, and filtered through a system with at least 5- to 10-micron particle

size collection capability. NOTE: A system containing a series of several filters with progressively smaller pore sizes is recommended to avoid rapid clogging of filtration system by large particles. All expended filters will be discarded as contaminated waste. Filtered water may be discharged to a sanitary sewer drain.

- A clean room with one curtained doorway into the shower and one entrance or exit to uncontaminated areas of the building. The clean room will have sufficient space for storage of workers' street clothes, towels, and other uncontaminated items.

Six-millimeter black or opaque plastic will be used for the walls of the worker decontamination enclosure system to ensure the privacy of the workers.

### ***Equipment Decontamination Enclosure System***

An equipment decontamination enclosure system will provide a means of decontaminating drums, scaffolding, material containers, vacuum and spray equipment, and other tools and equipment for which the worker decontamination system is not suitable. The subcontractor will provide or construct an equipment decontamination enclosure system contiguous to the work area that consists of two totally enclosed chambers as follows:

- A washroom, constituting an airlock, with a curtained doorway to a designated area of the work area and a curtained doorway to the holding area. This area will be the same as the equipment room in the worker decontamination enclosure system. The washroom wastewater will be drained, collected, and filtered through a system with at least 5- to 10-micron particle size collection capability. NOTE: A system containing a series of several filters with progressively smaller pore sizes is recommended to avoid rapid clogging of filtration system by large particles. All expended filters will be discarded as contaminated waste. Filtered water may be discharged to a sanitary or storm sewer drain.
- A holding area, constituting an airlock, with a curtained doorway to an uncontaminated area. This area will be the same area as the shower room in the worker decontamination enclosure system.

The equipment decontamination area will be located so as to facilitate movement of asbestos waste to a loading area.

### ***Separation of Work Areas***

The subcontractor will use air and watertight barriers to separate the parts of the facility required to remain free of contamination from the parts of the facility that will undergo asbestos abatement work. The barriers will be constructed of suitable wood or metal frame and covered on the inside and outside with plywood and/or 6-millimeter plastic sheeting sealed with tape.

Where applicable, plexiglass partitions will be installed to enable asbestos hazard abatement activities to be observed in rooms adjacent to the work area.

### ***Maintenance of Enclosure Systems***

Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures continually on a daily basis until final clearance has been achieved. Use smoke methods to determine the effectiveness of barriers daily per OSHA 29 CFR 1926.1101. Asbestos abatement work will not commence until arrangements have been made and approval

granted for disposal of waste at an acceptable site, and work areas, decontamination enclosure systems, and parts of the facility required to remain uncontaminated are effectively segregated. The subcontractor will inspect the work area enclosure system to ensure that it is air- and watertight. Any deficiencies noted by the subcontractor will be immediately corrected. Tools, equipment, and material waste receptors are on hand.

### **Air Filtration System**

The subcontractor will not deliver negative air filtration devices on the job-site with used or previously installed HEPA filters. New HEPA filters will be installed, according to the manufacturer's instructions, once delivered onsite. Air filtration devices will not discharge air outside the building near pedestrian walkways or areas used for storage of equipment and materials. Once the project has been successfully completed with all final clearance criteria being met, all negative air filtration devices will have the HEPA filters removed and disposed of as asbestos-containing waste.

A pressure differential for contained work areas will be required per OSHA 29 CFR 1926.1101. At a minimum, the air filtration devices will provide for a complete air change every 15 minutes. Calculations used to determine the number of units required will be based on current performance and not rated capacity. NOTE: If actual cubic feet per minute are not measured, 70 percent of the rated capacity will be used.

The following formula will be used for estimating the number of air filtration devices:

$$\text{Number of units needed} = \frac{\text{ft}^2 \text{ of work area} \times \text{height of ceiling in feet}}{15 \text{ minutes} \times \text{cubic feet per minute* capacity of units}}$$

The pressure differential will be maintained so that the movement of tools, equipment, employees, and waste containers through the decontamination enclosure systems do not result in air flowout of the work area.

Air circulation throughout the work area will be maintained by the air filtration devices to reduce dead air spaces and provide appropriate ventilation inside the work area. The subcontractor will install a pressure differential meter with a strip or dial chart recorder. The meter and strip and/or dial chart recorder must show a measurable pressure differential between the work area and adjacent areas at a minimum of -0.02 inch of water. If the subcontractor cannot maintain an adequate pressure differential inside the work area all Work will be stopped until the problem is corrected.

The subcontractor or his/her representative will collect air samples outdoors where the air filtration devices discharge air. If the air sample analyses indicate that the air filtration devices are discharging fiber concentrations outside of the building in concentrations higher than typical outdoor ambient concentrations, the subcontractor will immediately repair or replace the defective unit or the defective components to eliminate the discharge of fibers from the work area.

Air filtration devices will not discharge air outside the building near pedestrian walkways.

### **5.1.13 Suggested Asbestos Removal Procedures**

#### **Work Area Preparation**

Prepare each work area as specified above.

#### **Pipe Insulation Removal**

This subsection applies to thermal pipe insulation removed in contained work areas. The asbestos material around pipes will be removed in small sections. The cloth jacketing on the pipe insulation will be cut along the top seam to allow the wetting of the insulation with amended water. At the top seam, the insulation will be sprayed thoroughly with amended water prepared in accordance with manufacturer's specifications. The sections will be parted and the inside of the insulation thoroughly wetted. The cloth cover will be cut around the circumference of the section being removed and lowered carefully and not allowed to drop to the floor. The material will be wetted again before placing inside appropriate sealable containers. All pipe surfaces (including elbows, support rods, and valves) will be cleaned thoroughly with damp sponges, scrubbing pads, or cloths until they are visibly clean. The next section of thermal system insulation will be removed following the same procedures. Containers that become full will be sealed and readied for transportation to an approved disposal site.

#### **Pipe Insulation / Glovebag Technique**

Prior to hanging any glove bags, all loose and friable material adjacent to the glovebag area will be wrapped and sealed in two layers of 6-millimeter poly. After the required hand tools and equipment are assembled, a polyethylene glovebag will be installed, according to the manufacturer's instructions and 29 CFR 1926.1101, on a small section of asbestos-containing thermal system insulation to be removed. If negative pressure enclosure has not been established, the inner portion of the glovebag will then be supported to allow negative air pressure, provided by a portable HEPA filtered vacuum, to be established inside the bag. All necessary tools and equipment will be inserted into the bag before sealing the bag to the pipe. The exterior cover on the pipe insulation will be cut and opened to allow thorough wetting of the insulation with amended water by inserting the nozzle of the portable sprayer into the bag. After the insulation has been opened and thoroughly wetted, the exterior cover will be cut around the circumference of the section being removed. After removal of the insulation material, all material will be contained in the lower compartment of the bag and thoroughly saturated. The inside of the glovebag and pipe will be washed down with amended water, wet wiped and encapsulated. All tools will be washed thoroughly before they are removed through the gloves of the bag. The glovebag will then be evacuated with the portable HEPA-filtered vacuum. While the bag is collapsed, it will be squeezed below the tool pouch and twisted. The bag will be sealed with tape or locking ties to separate the waste from the removal compartment. The glovebag will be cut along the top and sides and removed from the pipe. The glovebag will then be placed in the appropriate disposal container. NOTES: (1) At least 2 people will perform all glovebag work per OSHA 29 CFR 1926.1101, and (2) Glovebags will not be used on surfaces with temperature exceeding 150 degrees Fahrenheit.

### **Pipe Insulation / Wrap and Cut**

The subcontractor will verify all piping will not be reused by the owner and has been deactivated prior to cutting. Torch cutting or burning will be strictly prohibited during any phase of this project. All asbestos-containing and contaminated pipe insulation will be thoroughly encapsulated and wrapped in a minimum of two layers of 6-millimeter plastic sheeting prior to glove bag and cutting procedures. Use the specified glovebag removal method and remove two small sections of the insulation at the end of each length of pipe to be removed. Upon removal completion, thoroughly clean and encapsulate the exposed pipe and seal the exposed insulated ends with 6-millimeter plastic sheeting prior to cutting the pipe. Cut the pipe and carefully lower the section to the ground. Place the proper labels on each wrapped section of pipe for disposal. NOTE: Sawing through the pipe and insulation is prohibited.

### **Floor Tile and / or Mastic**

After preparation of the work area is completed as specified, saturate the floor tile with amended water using equipment capable of providing a mist application. Once the floor tile has been thoroughly saturated, apply pressure to the underside of the tile with care taken to prevent unnecessary breakage. The floor tile will remain wetted until placed into covered disposal containers. When specified, the subcontractor will use a low odor solvent to dissolve floor tile mastic with a flashpoint of one hundred forty degrees (140 degrees Fahrenheit). If the solvent used requires extra ventilation, protective equipment and/or respiratory protection, according to the solvents MSDS, the subcontractor will furnish the necessary ventilation devices (i.e., additional air filtration devices), personal protective equipment and/or NIOSH-approved cartridges. All residue/debris from using the solvent to dissolve the mastic will be HEPA-vacuumed and wet cleaned to remove all visible traces of mastic inside the work area. NOTE: The owner and environmental project manager will approve the use of alternate removal methods in advance.

### **Transite Panels**

Wet the transite with amended water before and during removal. Once the transite have been thoroughly wetted, carefully remove all transite and lower to the floor/ground, avoiding breakage. Once removed, wrap in two layers of 6-millimeter plastic sheeting. Place the proper labels (U.S. Department of Transportation, USEPA, NESHAP) on each wrapped section of transite for disposal. All surfaces will be thoroughly cleaned. HEPA vacuum and wet clean the entire exposed surfaces as necessary to remove all visible traces of the transite.

### **Breeching, Boiler, and Tank Insulation**

Carefully remove all metal plates, jackets, or other covering to expose the insulation, when applicable. Once exposed, the asbestos material around mechanical equipment will be removed in small sections. The cloth jacketing on the thermal system insulation will be cut to allow the wetting of the insulation with amended water. At the top, the insulation will be sprayed thoroughly with amended water prepared in accordance with manufacturer's specifications. The sections will be parted and the inside of the insulation thoroughly wetted. Metal rods and/or wire will be carefully cut and placed into appropriate disposal containers. The insulation material will be lowered carefully and not allowed to drop to the floor. The material will be wetted again before placing inside appropriate sealable

containers. All mechanical surfaces (including elbows, support rods, and valves) will be cleaned thoroughly with damp sponges, cloths, scrub pads, etc., until they are visibly clean.

### **Window Putty Glazing Compound**

Prior to abatement, all glazing compound should be sufficiently wetted with amended water and all loose material removed using hand scrapers to reduce fiber release and contamination of the surrounding interior and exterior surfaces. The entire window will be removed intact, lowered to the ground and immediately wrapped in two layers of 6-millimeter plastic sheeting. The window frame will remain inside of the opening unless glazing compound has been applied. Care will be taken to prevent damage to interior and exterior surfaces during window removal. Barricades will be setup and a watchman assigned to each area undergoing window removal to ensure the safety of pedestrian traffic and building occupants. Drop cloths will be placed under and over any object within 20 feet of the windows being removed. Materials should be removed with as little breakage as possible using razor scrapers, putty knives, painters' tools, etc., to reduce potential fiber release. All wrapped windows will be placed into the dumpster prior to the end of abatement activities daily. See Section 6.3 for special considerations for windows in structurally unsound Building E.

### **Asbestos-containing Roofing Materials**

For this project roofing materials will include rolled roofing, built-up roofing, roofing felts, roof mastics, and tar. Prior to abatement, all material that is to be removed will be sufficiently wetted with amended water to reduce fiber release. Materials should be abated with as little sawing and breakage as possible. Roofing will be taken up in sections and bagged, wrapped or bundled immediately. All roofing material(s) must be lowered to the ground and placed into a lined dumpster prior to the end of daily abatement activities.

### **Ceiling Tile and Mastic**

Lightly mist the exposed finished surfaces of the specified ceiling panels with amended water. Once the initial application of amended water has been applied to the panels, select one or more ceiling panels around the perimeter to gain access in the plenum space above the suspended ceiling system. Once access has been gained, thoroughly saturate all asbestos ceiling panels and handle carefully to prevent breakage. Progressively continue to wet the remaining asbestos ceiling panels with amended water concurrently with removal and place them in appropriate waste disposal containers until all ceiling panels have been completely removed. Once the panels have been completely removed, continue to remove all adhesive/glue, grid-work, support rods and rails, hangers, etc., associated with the suspended ceiling support system. After removal of the asbestos-contaminated ceiling system, all surfaces not contained in polyethylene (upper substrates) will be wire-brushed and/or wet-sponged or cleaned by an equivalent method to remove all visible material. All disconnections to electrical components will be in accordance with all applicable codes and standards. All existing ceiling fixture wiring will be secured using wire ties or equivalent methods of attachment in a workman like manner to prevent potential damage or hazards.

## General Decontamination

This section will apply to decontamination work to be performed under regulated work areas, not total containment work areas. Small deposits of previously damaged ACM found on floors, fixtures, boxes, etc. will be removed using HEPA filtered vacuum equipment and wet wipe methods in a 10-ft<sup>2</sup> area surrounding the material, or as necessary to remove all visible ACM. The regulated area will be visibly clean and free of all asbestos debris before proceeding to the next work area.

### 5.1.14 Removal and Disposal of Regulated Asbestos-Containing Materials

Disposal containers will be filled to a level that workers can handle safely and with ease. As disposal containers are filled, they will be sealed and moved to the staging area for decontamination.

In conventional total containment asbestos removal practices, clean external surfaces of containers thoroughly by wet sponging in the designated areas that is part of the equipment decontamination enclosure system. Place decontaminated, sealed plastic bags containing asbestos material into a second clean bag, twist the bag opening tightly, bend the twisted end downward, and seal with tape. Double-bagged and sealed materials will be placed into 6-millimeter plastic-lined roll-offs with appropriate labeling. Move all roll-offs to the holding area to await disposal at an approved landfill. If glove bag techniques are used, place the glove bag into a clean bag; twist the bag opening tightly, bend the twisted end downward, seal with tape, and then move it to the holding area. Place caution labels on containers in accordance with OSHA 29 CFR 1926.1101. Identification labels will also be placed on the outside of the first bag in accordance with USEPA 40 CFR Part 61, Subpart A and OSHA 29 CFR 1926.1101. Ensure that workers, wearing the proper PPE, who have entered from uncontaminated areas, remove containers from the holding area. Ensure that workers do not enter from uncontaminated areas into the washroom of the work area, and that contaminated workers do not exit the work area through the equipment decontamination enclosure system.

To prevent exceeding available storage capacity onsite as the work progresses, the sealed and labeled containers of asbestos waste will be removed and disposed of at a permitted disposal facility in accordance with regulatory requirements. Disposal documentation regarding ACM disposal will be provided to CH2M HILL.

After the waste containers are decontaminated, subcontractor will make arrangements for a hauler or truck driver from the waste disposal site to transport the asbestos waste and contaminated material to the disposal site.

All asbestos-containing waste inside the work area will be removed and items decontaminated before any cleanup work is started and before the isolation structures are dismantled.

The subcontractor will ensure all employees handling and discarding asbestos waste wear approved respiratory equipment and protective clothing.

In certain instances, plastic bags or fiber and metal drums may not be adequate or suitable to handle certain ACM. As an alternative, the subcontractor may remove ACM that is bulky

or cumbersome in two layers of 6-millimeter plastic sheeting sealed tightly at all joints with tape and/or spray adhesive.

### **5.1.15 Cleanup and Decontamination of the Work Area**

#### **Asbestos Cleanup**

Visible accumulations of asbestos material and debris will be removed. All surfaces will be wet-cleaned within the work area.

Plastic sheets will be removed from walls and floors only. The windows, doors, HVAC vents, and other equipment and penetrations will remain sealed, and any HEPA air filtration systems and decontamination enclosure systems will remain in service.

All surfaces in the work area and any other contaminated areas will be cleaned with water and/or with HEPA-filtered vacuum equipment. After cleaning the work area, 12 to 24 hours will be allowed to pass to allow dust to settle. The surfaces will be wet-cleaned or cleaned with HEPA filtered vacuum equipment all a second time. After completion of the second cleaning operation, the entire work area will be inspected to ensure it is free of visible asbestos dust and debris.

Sealed containers and all equipment used in the work area will be included in the cleanup and will be removed from work areas, via the equipment decontamination enclosure system, at an appropriate time in the cleaning sequence.

If the third party oversight representative finds visible accumulations of asbestos debris in the work area after cleaning, the subcontractor will repeat the wet-cleaning, at his own expense, until the work area is in compliance.

When a final inspection and air monitoring determine the area is free of accumulations of visible asbestos debris and airborne fibers, the decontamination enclosure systems will be removed, all areas will be thoroughly wet-cleaned and materials from the equipment room and shower will be disposed of as contaminated waste. A final check will be carried out by the subcontractor to ensure that no dust or debris remains on surfaces as a result of dismantling operations. All inspections will be documented.

### **5.1.16 Determining Abatement Completion**

#### **Visual Inspection**

The third party oversight representative will conduct a thorough first visual inspection of each work area after the subcontractor has indicated that all ACM has been completely removed. The first inspection will be conducted before the plastic sheets have been cleaned with damp mops and cloths, but after all gross debris has been properly cleaned prior to the spray application of sealant to exposed surfaces.

Items to be checked during the first visual inspection will include, but are not limited to, the adequacy of the removal of ACM from the substrates, and the presence of adhering material or accumulated material on exposed surfaces. Only after the work area has passed the first visual inspection will the subcontractor be permitted to apply sealant materials.

After the work area has passed the first visual inspection, the subcontractor will apply the sealant to exposed surfaces and clean all surfaces in the work area and any other contaminated areas with water and/or with HEPA-filtered vacuum equipment. The plastic sheets on the walls and floor may be sprayed with the sealant provided all loose asbestos debris has been removed from the plastic prior to spraying and that the plastic sheets are sufficiently clean in the judgment of the onsite third party oversight representative to allow the sealant to effectively bond any residual material to the plastic. The subcontractor will wait 12 to 24 hours to allow the sealant to dry and dust to settle.

The third party oversight representative will conduct a second visual inspection of the work area after application of the sealant. Items to be checked during the second visual inspection will include, but are not limited to, cleanliness of the work area and decontamination areas, accumulations of loose dust or debris on plastic sheets covering surfaces, walls, and floors, and complete coverage of the exposed surfaces by the sealant.

The third party oversight representative may, at their discretion, use an electric leaf blower during the inspection to dislodge or discover any hidden debris that should have been removed. It is strongly recommended that the subcontractor perform this procedure himself in each work area before notifying the third party oversight representative the area is clean and ready for inspection. If visible dust or debris is discovered during the inspection, the subcontractor will wet-clean the entire work area again until the third party oversight representative is satisfied all visible dust or debris has been removed.

If any accumulation of dust or debris is observed, the subcontractor will be required to wet-clean and/or HEPA vacuum the work area again and repeat the inspection procedures.

After the work area has passed the second visual inspection, the subcontractor will remove the plastic sheets from walls and floors only. The windows, doors, and HVAC vents will remain sealed. All HEPA-filtered air filtration devices and decontamination enclosure systems will remain in service. After an adequate settling period, the subcontractor will wet-clean or HEPA vacuum all objects and surfaces in the work area.

The third party oversight representative will conduct a third thorough visual inspection of the work area to ensure it is free of visible dust after completion of the final cleaning operation. After the work area has passed the third visual inspection and the walls, floors, and all exposed surfaces are dust free, final air monitoring will be performed by the third party oversight representative as described in Section 4.8. Only after the work area meets the air testing criteria(s) specified in Section 4.8 will the subcontractor be permitted to proceed with the next phase of work. All inspections will be documented.

### **5.1.17 Sealant Application for Lock Down**

In all areas where ACM were removed, a sealant approved by the third party oversight representative will be used to lock down any residual airborne asbestos fibers to the substrate and to prevent subsequent dispersion or resuspension. The sealant will be applied to unfinished walls, floor deck, plastic sheeting, and other applicable areas. Sealant will not be applied to dirt floors, mechanical and electrical equipment or to finished surfaces. The sealant will be applied with low-pressure airless spray equipment, and will be used and applied in strict accordance to manufacturer's specifications. The subcontractor will apply a

thin, visible, contiguous film of sealant to all areas specified. Additional applications will be required if the first application does not adequately cover the substrates or lock down residual airborne asbestos fibers.

### **5.1.18 Final Air Monitoring**

Final air tests will be performed to determine and document air quality upon completion of all asbestos abatement projects. The third party oversight representative will perform the final air tests after the work area has passed the final visual inspection. Fans or blowers will be used to circulate air in the work area during the final air tests to simulate building use conditions (aggressive sampling). Samples will be collected by use of high-volume electric sampling pumps calibrated up to a maximum flow rate of 10 liters per minute. Final clearance air samples will be collected and analyzed by phase contrast microscopy as described below.

Final air samples will be collected from several locations within the work area and in adjacent equipment and worker decontamination areas. The samples will be collected and analyzed by phase contrast microscopy using NIOSH Method No. 7400 Revision 3; A rules. The total airborne fiber concentrations for each sample location collected inside the work area must be less than or equal to 0.01 f/cc. If any air sample concentration within the work area is greater than 0.01 f/cc, the subcontractor will wait 24 hours from the end of the air sampling period and reclean the work area with HEPA-filtered vacuum equipment, damp cloths and mops. Additional sets of air samples for the entire work area will be collected and analyzed by the environmental project manager at the subcontractor's expense until the acceptable fiber concentration of 0.01 f/cc is achieved. If the fiber levels in the work area still exceed 0.01 f/cc, the subcontractor will be required to reclean and pay for the additional air monitoring.

## **5.2 Lead**

A lead-based paint (LBP) assessment was conducted for structures that will be demolished at the site. Results are presented in Appendix A. Sample results show the debris as a whole does not exceed the toxicity characteristic for lead under RCRA and therefore is nonhazardous waste that will be placed in the onsite consolidation cell. There are no environmental requirements to remove lead prior to demolition. However, lead may be removed from some structures in accordance with OSHA requirements (29 CFR 1926.62).

Painted metal that is accessible for recycling will be removed from the facility prior to demolition. If the painted metal cannot be removed because it is an integral part of a structure, its location will be noted and marked as necessary so the item can be segregated during the post-demolition sorting for recycling. LBP will not be abated from recyclable metals.

## **5.3 PCB-containing Light Fixtures**

TSCA, passed in 1976, is the federal statute under which the storage, use, treatment, and disposal of PCBs are regulated.

### 5.3.1 PCB Ballasts

Lamp fixtures are anticipated to be the most common source of PCB ballasts at the site. The fixture must be disassembled in order to remove the lamp ballasts for examination as PCB or No PCB and managed as PCB waste if the No PCB designation is not shown.

PCB ballasts will not be disposed as scrap metal or trash. Entire lamp fixtures will not be discarded as scrap metal without ballast removal and PCB evaluation.

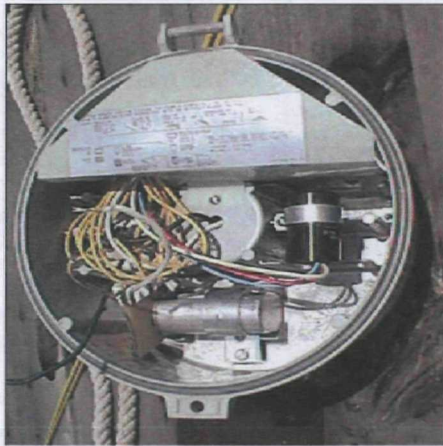
Pre-1980 ballasts may contain >50 parts per million (ppm) PCB in the asphaltic potting (insulating) materials as well as a small PCB liquid filled capacitor. Unless the ballast states No PCBs, it must be managed as regulated PCB waste.

- Intact, nonleaking ballasts that contain <50 ppm PCBs and no capacitor, an intact capacitor, or a capacitor marked No PCBs will be segregated and stored in a drum or other appropriate container, or 6-millimeter plastic-lined roll-off box and marked as non-TSCA waste or equivalent.
- Ballasts that contain ≥50 ppm PCBs or any ballast with a leaking capacitor will be segregated from non-TSCA waste, placed in leak-proof containers or in overpack containers and marked as PCB-containing waste or equivalent. Ballast with a leaking capacitor will be segregated from nonleaking capacitors.
- Ballasts that contain or are assumed to contain 50 ppm PCBs in the potting material, or any ballast that contains a leaking capacitor may be stored onsite for 180 days from the date of generation, as indicated under 40 CFR 761.65(c)(9) for PCB bulk product waste.

### 5.3.2 Small Capacitors

Some lamp fixtures and other electrical equipment will have a small capacitor. PCB small capacitors in pre-1980 equipment are commonly encountered during electrical work and demolition. These are often found in electrical equipment such as lamp fixtures (high-intensity discharge lamps) and air conditioners. All small capacitors must be removed, examined for No-PCB label and managed as PCB waste if the No PCB designation is not shown.

If managed separate from ballasts, small capacitors (even non-PCB liquid-filled small capacitors) will be contained separately, and not put in general trash or scrap metal receptacles. Leaking capacitors will be placed in a container marked PCB-containing waste.



*Fixture with Small Capacitor In-Place*



*Remove and Examine the Small Capacitor.  
Note: "No PCBs" On Label.*



Typical light ballasts

Potting material

Liquid filled capacitors

### 5.3.3 Transformers

TSCA has many unique requirements for differing types of transformers and other electrical equipment containing PCBs (capacitors, switches, voltage regulators). The following requirements apply to pole-mounted and pad-mounted transformers. The requirements for other electrical equipment will be evaluated on a case-by-case basis.

- Under 40 CFR §761.2(a)(2), a pole-top or pad-mounted distribution transformer manufactured before July 2, 1979, must be assumed to be PCB-Contaminated Electrical Equipment, i.e.,  $\geq 50$  and  $< 500$  ppm PCBs. A pole-top or pad-mounted distribution transformer manufactured after July 2, 1979, is assumed to be non-PCB, i.e.,  $< 50$  ppm PCBs. If the date of manufacture of the pole-top or pad-mounted distribution transformer is unknown, it must be assumed to be PCB-contaminated, i.e.,  $\geq 50$  and  $< 500$  ppm PCBs.
- The transformers will not be drained onsite. If the transformer is considered PCB-contaminated electrical equipment (i.e., manufactured prior to July 2, 1979, or known to contain  $\geq 50$  ppm PCBs); it will be marked with the date that the item was removed from

service. The storage area will be managed so that the transformers or their overpacks can be located by this date. Transformers that are not considered PCB-contaminated electrical equipment will be stored separately. All leaking transformers will be contained in an overpack or other leak-proof container while in temporary storage.

#### **5.3.4 PCB Oil**

Oils will not be removed from PCB-containing equipment or devices but rather the equipment/device will be managed as a whole. USEPA SW-846 Method 8082 will be used to determine PCB concentrations.

### **5.4 Universal Waste**

#### **5.4.1 Batteries**

Batteries that show evidence of leaks, spills, or damage will be contained in a structurally sound, compatible drum or other small container. Battery storage containers will remain closed. Electrolytes removed from batteries will be managed as solid/hazardous waste.

#### **5.4.2 Mercury-containing Equipment**

Mercury-containing equipment with non-contained elemental mercury or that shows evidence of leakage, spillage, or damage that could cause leakage will be placed in a drum. The drum must be closed, structurally sound, compatible with the contents of the device, must lack evidence of leakage, spillage, or damage that could cause leakage, and must be reasonably designed to prevent the escape of mercury into the environment by volatilization or any other means. Mercury ampules will not be removed while onsite but managed by disposal facility offsite.

#### **5.4.3 Lamps**

Lamps will be contained in a drum or package that is structurally sound and adequate to prevent breakage. Lamp storage containers and packages will remain closed. NOTE: Crushing of universal waste lamps will not be allowed. Crushed or broken lamps will be contained separately.

### **5.5 Building Materials**

#### **5.5.1 Residue**

Residue from facility operations is present throughout the inside/outside of some buildings. Several samples of the residue were collected and analyzed for toxicity characteristic leaching procedure (TCLP) metals. Several were found to contain levels of lead and cadmium above toxicity characteristic levels (40 CFR 261.24; see Appendix A for results). In addition, building materials (e.g., concrete, brick) were sampled and analyzed for TCLP metals (see Appendix A for results). The building materials were sampled by collecting chip samples to provide general existing contamination information to help determine disposal options. The sampling results showed that building materials at several locations exceed toxicity characteristic limits for cadmium or lead. Subsequent waste characterization

sampling, representative of the debris as a whole (versus surface only) was performed November 2010. The results show that the building materials are below the toxicity characteristic limits (40 CFR 261.24) and can be placed in the onsite consolidation cell. The building materials will be decontaminated for health and safety purposes, to remove any hazardous residue, and to reduce potential for migration during demolition activities. The removed residue will be sampled to determine disposal requirements. Residue with sample results below the toxicity characteristic limits (40 CFR 261.24) will be placed in the consolidation cell. Residue with sample results above the toxicity characteristic limits will be packaged and shipped offsite to a hazardous waste treatment or disposal facility. If a large quantity of residue is determined to be above the toxicity characteristic limits, a cost analysis will be performed to compare the costs of offsite disposal versus construction of an RCRA Waste Pile to manage the hazardous residue. The cost comparison will be presented to USEPA to determine the preferred management method.

In order to safely demolish the buildings, one or more the decontamination methods described in Section 5.5.4 below will be utilized on all floors, walls, equipment, piping, etc. The concrete, brick, etc will be rinsed to remove residues. The debris has been representatively sampled and analyzed and determined to be nonhazardous per USEPA 40 CFR Subpart C and IEPA Title 35 Part 721 Subparts B and C. Per the interim record of decision (USEPA, 2009), nonhazardous wastes may be placed in the onsite consolidation cell. All collected residues and wastes will be properly contained, characterized, and disposed of properly offsite in accordance with federal and state regulations.

### **5.5.2 Building N**

Building N contained broken laboratory equipment including mercury spill kits. A Lumex was used to screen the interior of the building for evidence of mercury vapors. The north area of the office building was deemed unsafe for sampling by the sampling crew due to screening results. Additional sampling of the interior of the building will be performed to determine if mercury decontamination is required and if so, the extent of the decontamination required. If decontamination is required, the building will be decontaminated to allow for safe entry into the building to complete surveys and to minimize disposal of mercury-contaminated waste.

### **5.5.3 Tanks, Equipment, and Piping**

Tanks, equipment, piping, ventilation ductwork, and other metal items will be decontaminated as appropriate, prior to offsite transportation and disposal or recycling. The requirements for scrap metal dealers to accept a majority of the metals materials in their present condition are that the interior and exterior surfaces are free of any residual material and gross surface contamination is removed. The surfaces will be decontaminated such that the materials can be safely recycled or disposed as construction and debris, and to render the equipment/piping safe for demolition work.

Some items may be removed from the buildings and decontaminated at a decontamination pad. The decontamination pad will be lined with minimum 40-millimeter high-density polyethylene or equivalent and include berms or similar in order to capture and collect all decontamination water. Decontamination sprays shall not fall outside of the

decontamination pad. Decontamination water will be collected from a sump in the decontamination pad or drain valves on equipment if they exist.

The two existing aboveground storage tanks are assumed to be empty based on visual observations (i.e., open valves near the bottom of the tank) and information provided by Mr. Clarence Smith during the site walk. However, the tanks will be opened at the top and inspected during pre-demolition activities, when equipment and decontamination/support facilities will be onsite and the tanks can be safely assessed. If free product or sludges are observed, the material will be sampled to determine decontamination and disposal requirements prior to demolition. A third, much smaller, rectangular tank, was detected during the June 2010 building inspections, near the side of a centrally located building along the railroad tracks. The presence/absence of this tank will be confirmed and inspected and sampled if contents are found to remain. This will be completed as part of predemolition activities.

Decontamination will include all equipment, including but not limited to, all tanks, rotary kilns, cooling towers, ductwork, and hoppers, etc. All tanks, equipment, and piping, etc., are assumed to be contaminated with hazardous wastes (metals-containing residues). They will be decontaminated in accordance with the Alternative Debris Standards, 40 CFR 268.45 as described below.

As specified in the Alternative Debris Standards, 40 CFR 268.45, metal, glass, plastic, and rubber contaminated with hazardous waste can be decontaminated by multiple methods including high-pressure steam and water sprays, water washing and spraying, hot water spraying, etc., to "...clean debris surface." The Alternative Debris Standards are considered "performance standards;" post-decontamination sampling is not required as long as decontamination follows these standards. Once these types of material are decontaminated, they can be removed as nonhazardous wastes or recyclable material.

Decontamination water will be collected and contained in portable tanks. Adequate temporary storage capacity, but no more than a total of 20,000 gallons, will be provided at the project site. Sampling and analysis of the decontamination water will be performed for profiling purposes and to determine disposal options. Waste characterization samples will be collected at a rate of one per portable tank or one per 10 drums.

#### **5.5.4 Methods of Decontamination for Industrial Facilities**

Many off-the-shelf technologies which are well suited for the decontamination of the facility are available. In general, these technologies have been developed and used in industrial cleaning applications for the maintenance of process plants and power generating facilities prior to being introduced into the environmental marketplace. A discussion of the various technologies that are candidates for use at the site is provided below. The method will be determined during the procurement process. Bidder's proposals will be evaluated for technical approach and associated costs.

##### **Low-pressure Water Blasting**

Low-pressure water blasting is one of the most commonly used techniques to perform industrial and environmental cleaning for the removal of light to medium staining and residue from affected surfaces. For this work plan, low-pressure water blasting is defined as a pressure washer that can deliver a maximum pressure of 3,500 pounds per square inch

with a flow rate of 5 to 6 gallons per minute. Low-pressure water blasters are available from commercial rental stores and require little or no training to operate.

### **High-pressure Water Blasting**

High-pressure water blasting has been used more and more in the environmental cleanup business during the last several years. For this work plan, high-pressure water blasting is defined as having an operating pressure of greater than 5,000 pounds per square inch up to 40,000 pounds per square inch with a flow rate of 10 to 30 gallons per minute. This method of decontamination is very effective in removing heavy, gross contamination from a variety of surfaces. The ultra high-pressure water blasters have even been used to cut stainless steel tanks that contain materials inside them that prohibit the use of hot cutting techniques. In certain industrial applications high pressure water has been used to remove concrete flooring (known as hydro-demolition). The high-pressure water blasters have a standard lance and wand attachment to clean vertical surfaces such as walls and ceilings as well as walk behind specialty attachments to clean large horizontal surfaces such as floors. The walk behind spin jets can be used to clean concrete floors and operate at pressures from 10,000 to 36,000 pounds per square inch. These types of industrial pressure washers are normally operated by an individual that has received adequate training in the safe operation of the equipment.

### **Dry Ice Blasting**

Dry ice blasting is a form of abrasive blasting, which dry ice (the solid form of carbon dioxide) is accelerated in a pressurized air stream and directed at a surface in order to clean it. The method is similar to other forms of abrasive blasting, but substitutes dry ice as the blasting medium. Dry ice blasting leaves no chemical residue as dry ice sublimates at room temperature.

### **Mechanical Removal**

Mechanical removal of residual contamination can be done for relatively small horizontal or vertical affected areas. Mechanical devices such as needle guns and scabblers have been used to remove thin veneers of contaminants from masonry walls and floors. Mechanical removal techniques have also been utilized for the removal of lead-based paint as well as the removal of radioactive contamination from concrete.

### **Chemical Extraction Technologies**

Chemical extraction technologies have been utilized in a variety of applications at operating facilities where non-destructive techniques must be employed. In general, the chemistry of chemical extraction is based on the theory that contaminants often migrate into the pores and microscopic voids of a material. Over time, the mobility of the contaminants and electrostatic forces often drive these contaminants to deeper levels in the substrate. In addition, these contaminants tend to become chemically or electrostatically bonded to the substrate. The chemical extraction process is designed to achieve the following:

- Reopen the pores and capillary pathways to the maximum possible extent
- Penetrate the pores as deeply as possible
- Break the substrate and contaminant bonds that may be holding the contamination in place

- Bind or sequester the contaminants in the chemical solution to prevent recontamination

This particular technology has been employed for the removal of radionuclides, PCBs, and other hazardous organic and inorganic substances from solid materials such as concrete, brick, and steel.

## SECTION 6

# Demolition

Demolition activities will occur after decommissioning and decontamination of the facilities. Buildings and tanks will be demolished to grade with the slabs/foundations to remain. Scrap metal will be sent for offsite recycling if possible. Demolition debris (concrete/brick, etc.) will be processed onsite (to 2-foot minimum) and placed in the onsite consolidation cell. Demolition debris will be placed in uniform lifts to the proposed waste grades as shown on the drawings for the onsite consolidation cell. Waste lift thickness will not exceed 2 feet with a maximum particle size of 1 foot.

## 6.1 Roles and Responsibilities

Listed below is a table delineating the roles and responsibilities that each party may take during a demolition project. Depending upon the owner's wishes and site-specific conditions the responsibilities listed in the table can be modified as necessary to meet the requirements of the project. The primary role of the USEPA is to set forth the overall objectives and schedule for the project and to decide what duties and responsibilities they desire to assign to others. In a turn-key plant decontamination and demolition project, the CH2M HILL and subcontractor's roles are combined under one responsible entity.

**TABLE 6-1**

Roles and Responsibilities

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Description of activity	USEPA's role	CH2M HILL's Role	subcontractors Role
Permit – Environmental Impact Statement	X - Supply data	X - Prepare Plan	
Permit – Stormwater Pollution Prevention		X - Prepare Plan	X - Implement
Permits – All Other			X - Obtain
Selection of Bidders		X - Approve	
Submittals		X - Approve	X - Prepare
Pre-Demo Preparation			
Training and Testing			X
Water Supply System	X - Provide Access	X - Design (if required)	X - Construct
Protect Site			X - Implement
Regulatory Notifications		X - Verify	X - Implement
Utility Work		X - Design & Verify	X - Notify & Implement
Hazardous Material Work as Required	X - Provide Info	X - Design/Specs & Inspection	X - Implement
Demolition Work	X - Provide Info	X - Design Project - Provide Inspection	X - Implement
Disposal and Recycling			X - Implement
Final Site Grading and Drainage	X - Define What is Needed	X - Design/Survey and Inspection	X - Implement

## 6.2 Typical Equipment for Demolition Projects

There is a variety of tracked equipment that is very effective in completing demolition projects. In the table below, the various structures that could be part of a demolition project and the equipment that is typically utilized to perform the demolition are presented. The table is not meant to be an all inclusive list nor is it meant to dictate means and methods for the subcontractor that will implement the demolition work. It is presented as a guidance document to provide USEPA with an idea of what type of equipment they might see at the site to perform the demolition.

**TABLE 6-2**

Typical Equipment for Demolition Projects

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Category of Work	Sub-Category	Typical Methods of Demolition
Structures	Above Grade – Structural Concrete and Steel Frame	Excavator with Shear or Bucket & Thumb; Crane and Wrecking Ball; Explosives Option
	Wood, Light Steel Frame	Excavator with Bucket & Thumb; Front End Crawler Loader, Tired Front End Loader, Backhoe
	Heavy Concrete – i.e., Equip. Foundations, etc.	Crane & Ball; Excavator with Breaker
Equipment	Large/Heavy Equip. and Elevated Items - Turbines, Boilers – etc.	Crane with Rigging Crew; Existing Overhead Crane if Operable; Manlifts for Access
	General Equip. – i.e., Pumps, Motors - etc.	Large Forklift, Crane, Rigging Crew; Manlifts for Access
	Piling	Excavator with Bucket and Thumb; Crane with Pile Extractor
	Concrete, Asphalt Yard Paving	Excavator with Bucket; Front End Crawler Loader
Recycle Demolition Materials	Structural Steel, Pipe, and Miscellaneous	Excavator with Shear
	Concrete & Asphalt	Portable Crushers (designed for this application)
	Timber	Light Crane; Forklifts; Rigging Crew
Miscellaneous Structures and Equipment	Tanks & Vessels	Excavator with Plate Shear; Excavator with Bucket & Thumb; Torch-Cut from Manlift
	Overhead Conveyors and Similar Structures	Crane with Rigging Crew and Manlift; Excavator with Shear

Techniques that are safe will be used to complete the demolition work. As such, demolition techniques such as explosives or mass wrecking equipment will not be used due to the proximity to neighborhoods and public roadways.

## 6.3 Structural Considerations

Buildings E, K, and the southern end of Building M are structurally unsound and unsafe for entry. As such, asbestos and lead sampling has not been performed in these buildings. These buildings will be partially demolished to allow subsequent sampling of the building materials. Building E contains many windows in the structurally unsound area. Window caulking at the site has tested positive for asbestos. As such, these windows will be sufficiently wetted during removal (by excavator with grapple) and the windows will be packaged and disposed with ACM waste. Several windows are broken and caulking materials may be dispersed on the building flooring or on the ground outside the building. After removal of the structurally unsound building materials, any caulking on the flooring will be wetted, swept up, packaged and disposed as ACM. If caulking material is observed on the ground outside the buildings, the top 1 to 2 inches of the soil will be removed, packaged, and disposed of as ACM.

If testing performed after partial demolition of these building show the equipment and building materials to contain ACM, pricing for the additional materials will be solicited. After approval of additional funding, the appropriate notifications will be made and the materials will be abated prior to performing the remaining demolition.

## 6.4 Dust and Emission Control Procedures

Dust and emission control procedures are critical to the overall success of the demolition work at the site. Based upon the site's location and its close proximity to residential neighborhoods, it is imperative that any fugitive emissions be controlled and contained within the plant boundaries using engineering controls. In general there are three primary sources of dust on a typical demolition project: (1) Existing fine material from former operations, (2) Dust generated from demolition operations, (3) Yard dust created by moving equipment around the site.

### 6.4.1 Dust Control

There are a number of options for the general control of dust depending upon what is available on the site. Generally, a 1½-inch fire hose equipped with an adjustable fire nozzle can apply the water where it is needed. In cases where too much water could be a problem, there are various types of high-pressure, low-volume systems available to create a misting type of application. For accessing elevations beyond the reach of available pressure, a manlift is often used or water is supplied to a secondary, high-pressure pump to boost range. The following water sources can be used:

- Use existing hydrants
- Hook up to a city hydrant with a meter
- Use water tank trucks to bring water to site and supply with pumps where needed
- For yard dust, use water trucks with spray bars to periodically wet the ground and roadways.

If there is any chance of the dust being contaminated, appropriate PPE must be used. During demolition, the structure being demolished is pre-wetted as much as possible and

sufficient hoses are used to maintain minimum dusting. Dust control is also needed for recycling operations, especially any concrete crushing operations. Trucks leaving the site should be wetted and covered with tarps to eliminate any dust outside of the site. Trucks will be inspected prior to leaving the site and inspection will be documented. A wheel wash system will also be used if the truck tires travel through unpaved areas. Buildings will be decontaminated prior to demolition to remove contaminants from building materials. Air monitoring/sampling will be implemented to verify that decontamination and dust control measures are being effective.

#### **6.4.2 Control of Other Contaminants**

For existing contaminants that cannot be removed during the hazardous materials removal and decontamination process, there are several possible methods to control migration, including the following:

- Enclose contaminated areas with high-strength visqueen or shrink wrap and hand clean the area as it is being demolished in small pieces using hand held tools.
- Remove contaminated equipment or structures in sections that are rigged and lowered with crane and rigging crew to a point where they can be cleaned.
- For small contaminated items, it may be possible to shrink wrap the entire piece and dispose of it as a hazardous waste.

#### **6.4.3 Stormwater Pollution Prevention**

Stormwater that does not contact contaminated building materials or equipment (non-contact water) will not be collected or disposed. Contact water from decontamination of building materials and equipment will be collected, contained, sampled and properly disposed. Any stockpiles with contamination materials will be bermed, lined, and tarped to minimize contact water.

Suggested methods for stormwater pollution prevention to be incorporated as best management practices (BMPs) are as follows:

1. The existing stormwater collection system is old and generally considered not useable. However, any catch basins within the work area will be protected from damage by the demolition operations. Catch basin grates will be covered with geotextile filter fabric or surrounded by haybales to keep silt from entering the stormwater collection system.
2. Silt fencing and other similar methods will be utilized to prevent any sediment from escaping the project site. Existing ponds will be protected from any possible sediment runoff using silt fencing or similar.
3. To prevent stormwater runoff from entering the work areas, earthen perimeter controls may be used to divert runoff from areas upslope of the work areas. If needed, a continuous, compacted earthen mound will be constructed along the upslope perimeter of the work area. As an additional control measure, a shallow ditch may accompany the earthen mound.

4. For above-grade demolition, all floor or storm drains in the slab will be plugged with concrete.
5. A construction entrance will be constructed in accordance with the Consolidation Cell Design Drawings.
6. A dry truck decontamination station will be constructed near the work area exit and will consist of push brooms, square shovels, and a supply of polyethylene sheeting. Dry decontamination methods (sweeping, and shoveling) will be the preferred method to physically remove any soil which may contact truck wheels or gates before leaving the site.
7. Waste staging areas will be located in areas that do not receive a substantial amount of runoff from upland areas and do not drain directly to a waterbody. Containers will be covered before periods of rain and at the end of the work day.
8. A SWPPP will be generated and implemented for site activities.

BMP inspections will be performed and documented in accordance with the SWPPP. In general, the three kinds of inspections include: routine inspections, inspections performed before rain events, and inspections performed after rain events.

### **Routine Inspections**

Routine inspections will be performed to ensure the integrity and effectiveness of BMPs and to minimize the work required to prepare a site before a rain event. Maintenance activities (cleaning, repair, and replacement) will be performed as needs are identified in the routine inspections.

### **Inspections before Rain Events**

If weather forecasts identify impending rains, an inspection will be performed to ensure that stormwater BMPs are cleaned out and operating properly. The inspection will verify that dumpsters are covered, any chemicals are covered, and no oil spills are present. All BMPs will be visually inspected when the site will be inactive for several days, such as weekends or holidays. This will help to prepare for rains that might occur when workers are offsite.

### **Inspections after Rain Events**

After a rain event, BMPs will be inspected to prepare the site for the next rain event. Within 48 hours after rain, BMPs will be inspected, cleaned, and repaired as needed.

## **6.4.4 Air Monitoring Plan**

During abatement and decontamination activities, air monitoring will be performed in accordance with the HSP to protect workers and surrounding receptors. Air monitoring locations will be determined in the field based on work area, work activities and weather conditions.

During demolition activities, real-time air monitoring at the property line will be performed and recorded to verify there is no offsite migration of contaminants. A Data Ram dust monitor, or equivalent, will be used and monitoring will be done continuously throughout the demolition activities. If dust level readings exceed action levels, demolition activities will be halted and dust control measures will be modified to meet acceptable levels.

## SECTION 7

# Waste Management Plan

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This section outlines the procedures for managing waste generated during the decontamination and demolition of the Eagle Zinc Facility. The Waste Management Plan identifies waste streams that will be generated during these activities and discusses the requirements for waste accumulation/storage, transportation, and disposal as well as general procedural requirements. Recycling and reuse of waste materials is discussed in Section 8.

The IEPA has incorporated by reference many the federal waste regulations under the RCRA. Accordingly, the applicable RCRA requirement for a specific waste will be cited.

All wastes generated during decontamination and demolition activities will be managed according to provisions in this plan, including wastes generated by subcontractors. All subcontractors are expected to understand the procedures outlined in this plan.

The Waste Management Plan is organized in the following subsections:

- Expected Waste Streams
- Waste Characterization
- Compatibility Evaluation
- Onsite Management
- Transportation
- Disposal
- Inspections
- Training
- Records and Reporting
- Applicable Regulatory Requirements

## 7.1 Expected Waste Streams

This section describes the categories or types of waste streams that are expected to be generated during decontamination and demolition activities at the site. Solid wastes consist of any materials (solid or liquid) that are intended to be discarded. For purposes of this plan, the term solid waste includes wastes that are subject to RCRA. During decontamination and demolition activities, several categories of RCRA solid wastes warrant detailed consideration in this plan: hazardous waste, universal waste, PCB-containing devices/equipment, nonhazardous waste, Illinois Special Waste, and construction and debris.

### 7.1.1 Illinois Special Waste

Illinois Special Waste includes hazardous waste and pollution control wastes. A hazardous waste is defined below. Pollution control wastes include liquid wastes, asbestos waste, and regulated PCB waste. These wastes are regulated under Title 35 Ill. Adm. Codes 807-810.

It is likely the wastes generated on this project can be certified as non-special wastes per IEPA regulation.

## 7.1.2 Hazardous Waste

CH2M HILL assumes none of the waste is a listed hazardous waste as provided in 40 CFR 261 Subpart D. Wastes from the Eagle Zinc Facility will be characterized as hazardous waste if it exhibits one or more hazardous characteristics presented in Table 7-1 (40 CFR 261 Subpart C and 721 Subpart C of Title 35 of the Illinois Administrative Code). The wastes would carry the "D" waste code for that constituent.

**TABLE 7-1**  
Hazardous Waste Characteristics  
*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Waste Code	Characteristic	Regulatory Citation (40 CFR)	Examples			
D001	Ignitability—easily ignites and oxidizes	261.21	Some spent chlorinated solvents			
D002	Corrosivity—pH $\leq 2$ or $\geq 12.5$ , able to dissolve metals or burn skin	261.22	Spent sulfuric battery acid			
D003	Reactivity—capable of rapid chemical reaction, detonation, explosion, or generation of toxic fumes	261.23	Dry organic peroxide used as an accelerator in fiberglass repair			
D004 - D043	Toxicity—waste contains specific contaminant in leachate extracted from waste using Toxicity Characteristic Leaching Procedure (TCLP), SW-846 Method 1311	261.24	D004-Arsenic	5.0 <sup>a</sup>	D023-o-Cresol	200
			D005-Barium	100	D024-m-Cresol	200
			D006-Cadmium	1.0	D025-p-Cresol	200
			D007-Chromium	5.0	D026-Cresol	200
			D008-Lead	5.0	D027-	7.5
			D009-Mercury	0.2	1,4Dichlorobenzene -	0.5
			D010-Selenium	1.0	D028-1,2 Dichloroethane	0.7
			D011-Silver	5.0	D029-	0.13
			D012-Endrin	0.02	1,1Dichloroethylene -	0.008
			D013-Lindane	0.04	D030-2,4Dinitrotoluene	0.13
			D014-Methoxychlor	0.5	D031-Heptachlor	0.5
			D015-Toxaphene	10	D032-	3.0
			D016-2,4-D	1.0	Hexachlorobenzene -	200
			D017-2,4,5-	0.5	D033-	2.0
			TP(Silvex)	0.5	Hexachlorobutadiene	100
			D018-benzene	0.3	D034-Hexachloroethane	5.0
			D019-carbon tetrachloride	100	D035-Methyl ethyl ketone --	0.7
			D020-Chlordane	6.0	D036-Nitrobenzene	0.5
			D021-Chlorobenzene		D037-Pentachlorophenol	400
			D022-Chloroform		D038-Pyridine	2.0
					D039-Tetrachloroethylene -	0.2
					D040-Trichloroethylene -	
					D041-2,4,5-Trichlorophenol	
					D042-2,4,6-Trichlorophenol	
					D043-Vinyl chloride	

<sup>a</sup> All units in milligrams per liter

Potential hazardous wastes generated from decontamination and demolition activities may include:

- Process waste and/or residues:
  - Cadmium - D006
  - Lead - D008
- Building materials (putrescible)
- Aqueous wastes from decontamination

### 7.1.3 Universal Waste

Universal wastes are regulated under RCRA (40 CFR 273). The applicable requirements are determined by the amount of universal waste generated at any one point in time. If less than 5,000 kilograms of universal waste generated during decontamination and demolition activities, the universal wastes are subject to the small quantity handler requirements (40 CFR 273, Subpart B). If more than 5,000 kilograms of universal waste are generated, the waste is subject to the large quantity handler requirements (40 CFR 273, Subpart C). Once 5,000 kilograms of universal waste is generated, all universal waste must be handled in accordance with the large quantity handler requirements for the rest of the calendar year. The following universal wastes may be generated.

#### Batteries

These include nickel-cadmium and small sealed lead-acid batteries, which are found in many common items in the business and home setting, including electronic equipment, mobile telephones, portable computers, and emergency backup lighting.

#### Mercury-containing Equipment

This equipment includes devices or a part of a device (including thermostats, but excluding batteries and lamps) that contains elemental mercury integral to its function.

#### Lamps

These are defined as the bulb or tube portion of an electrical lighting device, which typically contain mercury and sometimes lead, and are found in businesses and households. Examples of common types of lamps include fluorescent, high-intensity-discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps. Crushed or broken lamps will be managed and disposed as hazardous waste for mercury (D009).

### 7.1.4 Debris Contaminated with Lead-based Paint

The following two waste streams contain LBP and will be generated during demolition activities: Demolition debris that contains LBP, and debris from removing LBP from building materials.

Where LBP is removed from a surface, the resulting debris (e.g., paint chips) will be contained. It is anticipated that this waste will be an RCRA hazardous waste because of lead, and will be managed as such unless otherwise characterized.

Based on sampling results from the structures, demolition debris that is coated with LBP will be managed as a nonhazardous solid waste and placed in the onsite consolidation cell. Scrap metal with LBP that will be recycled is exempt from RCRA as a solid waste (40 CFR 261.4(a)(13)). Accordingly, scrap metal will not be characterized.

### 7.1.5 Nonhazardous Waste

For purposes of this plan, this category includes those solid wastes that are not hazardous in accordance with 40 CFR 261, universal wastes, or regulated for disposal under another state or federal law.

### 7.1.6 Municipal Solid Waste

Uncontaminated solid waste would include municipal solid wastes, also referred to as garbage or trash, which include everyday items such as packing materials, office waste, food scraps, and green waste.

### 7.1.7 Used or Waste Oils

Used oils and certain used oil filters are regulated under 40 CFR 279 and include any oil that has been refined from crude oil or any synthetic oil made from coal, shale or polymer-based starting material. As the name implies, it must have been used, and as a result of such use, it is contaminated with physical impurities (like metal fines, sawdust, or dirt) or chemical impurities (like fuel, solvents, halogens, or water).

Used oil includes	Used oil <i>does not</i> include
Engine oil	Vegetable oil or animal oil, even when used as a lubricant
Transmission fluid	Virgin (unused) oil
Compressor oil	Bottom clean-out waste from virgin oil storage tanks
Metalworking oils	Petroleum-derived products like antifreeze or kerosene
Hydraulic oil	Petroleum-distillates used as solvents
Refrigeration oil	
Oils used as buoyants	
Electrical insulating oil	

USEPA assumes used oil will be recycled. Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with a listed (halogenated) hazardous waste (with a few exceptions note in 40 CFR 279). This presumption may be rebutted by sampling the oil, otherwise the used oil must be managed as a hazardous waste under 40 CFR 262-270 instead of under the more favorable used oil management standards of 40 CFR 279.

The term waste oil, for purposes of this plan, applies to petroleum, oils, and lubricants that have not been used and will be recycled. Waste oil is not a waste and not subject to RCRA if

it is recycled since it will be used for its intended purpose [(40 CFR 261.2(c)(2)(ii)] as well as two memorandums issued by USEPA).

### 7.1.8 Asbestos Waste

Most of the structures to be demolished contain ACM, which are subject to NESHAP, 40 CFR 61, Subpart M, if it is:

- Friable asbestos material
- Category I nonfriable ACM (e.g., resilient floor tiles) that has become friable
- Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading
- Category II nonfriable ACM (e.g., transite siding), that when dry, has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

To prevent Category I, nonfriable, ACM from becoming subject to NESHAP, it will not be subject to sanding, grinding, cutting, or abrading (cutting means to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching). In most cases, Category II ACM will be removed before demolition. If the materials are carefully removed so as not to cause significant damage, the materials will not be subject to NESHAP.

Friable and nonfriable ACM is regulated as an Illinois special waste for offsite transportation and disposal under 33 CSR 1, Section 4.13.

### 7.1.9 PCB Waste

TSCA, passed in 1976, is the federal statute under which the storage, use, treatment, and disposal of PCBs are regulated.

A TSCA waste is a waste which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (1) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness, or (2) pose a substantial present or potential hazardous to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. TSCA wastes are individual chemical wastes (both liquid and solid), such as PCBs.

#### PCB Ballasts and Small Capacitors

It is anticipated that some fluorescent light ballasts removed prior to demolition will contain PCBs in the potting material and/or in small capacitors, and may be regulated under TSCA. See the Decontamination Plan for a detailed discussion on PCB ballasts and small capacitors.

Table 7-2 provides abbreviated summary of the TSCA requirements for the different types of light ballasts<sup>1</sup>.

<sup>1</sup> USEPA, Revisions to the PCB Q and A Manual, September 2001.

**TABLE 7-2**

TSCA Disposal Requirements for Light Ballasts

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

PCB Capacitor	PCB Potting Material	Labeling, Transportation and Manifesting for Disposal	Disposal Reference in 40 CFR§761	Disposal Options
"No PCBs" label		Not regulated under TSCA	N/A	Not regulated under TSCA
None	< 50 ppm	Not regulated under TSCA	N/A	Not regulated under TSCA
Intact and non-leaking or none	≥ 50 ppm	Is a PCB bulk product waste. No labeling is required. Manifesting is required for disposal.	.50(b)(2)(ii) .62(a)	TSCA Incinerator TSCA/RCRA Landfill Alternate Destruction Method Decontamination Coordinated approval State approved landfill (leach test required) Risk-based approval
Intact and non-leaking	< 50 ppm	No labeling or manifesting required	.50(b)(2)(i) .60(b)(2)(ii)	As municipal solid waste 40 CFR 761 Subpart D options
Leaking	< 50 ppm or ≥ 50 ppm	Disposal as PCB bulk product waste. No labeling is required. Manifesting is required for disposal.	.62(a)	TSCA Incinerator TSCA/RCRA Landfill Alternate Destruction Method Decontamination Coordinated approval Risk-based approval

## Transformers

It is assumed the transformers that will be removed prior to demolition or that are in storage are either pole-mounted or pad-mounted distribution transformers. Under 40 CFR §761.2(a)(2), a pole-top or pad-mounted distribution transformer manufactured before July 2, 1979, must be assumed to be PCB-Contaminated Electrical Equipment, i.e., ≥ 50 and < 500 ppm PCBs. A pole-top or pad-mounted distribution transformer manufactured after July 2, 1979, is assumed to be non-PCB, i.e., < 50 ppm PCBs. If the date of manufacture of the pole-top or pad-mounted distribution transformer is unknown, it must be assumed to be PCB-contaminated, i.e., ≥ 50 and < 500 ppm PCBs.

## PCB Oil

PCB oil that contain ≥ 2 ppm PCBs are regulated for disposal under TSCA (40 CFR 761).

### 7.1.10 Other Waste

Other wastes that do not fit into one of the above categories, but may be regulated for removal and/or disposal including:

- Smoke detectors or exit signs with an ionizing radiation source (typically americium and tritium, respectively) are not specifically regulated by USEPA or IEPA, but must be managed and disposed of properly. These may be present based on the age of the devices. The smoke detectors and exit signs will be inspected during universal waste removal and handled accordingly.
- Ozone-depleting substances – regulated under 40 CFR 82, Subpart F. The ozone-depleting substances that may be removed during decontamination include:
  - Refrigerants, including chlorofluorocarbons and hydrochlorofluorocarbons, used in air conditioners and refrigeration equipment
  - Halon used in fire suppression systems

### 7.1.11 Construction and Demolition Debris

Construction and demolition debris generated during demolition is not specifically regulated under RCRA as a solid waste, but is regulated for disposal by IEPA. IEPA includes the following in the definition of construction and demolition debris:

Clean construction or demolition debris is defined as uncontaminated broken concrete without protruding metal bars, bricks, rock, stone, reclaimed asphalt pavement, or dirt or sand generated from construction or demolition activities. Clean construction and demolition debris can be recycled, buried below grade provided it is outside of a groundwater well setback zone, or disposed of in a landfill. If buried below grade outside of a groundwater well setback zone, the construction and demolition debris must be covered with sufficient uncontaminated soil to support vegetation within 30 days of the completion of the burial. Broken concrete without protruding metal bars may be used for erosion control.

Construction and demolition debris will not be buried onsite, but will be processed and placed into the onsite consolidation cell. Construction and demolition debris will be placed in uniform lifts to the proposed waste grades as shown on the drawings for the onsite consolidation cell. Waste lift thickness will not exceed to feet with a maximum particle size of 1 foot. Construction or demolition debris consists of the following.

- Bricks, concrete, and other masonry materials
- Soil
- Rock
- Asphalt pavement
- Glass
- Non-metal Piping

## 7.2 Waste Characterization

This subsection discusses the approach to waste characterization and documentation procedures.

### **7.2.1 Waste Characterization Approach**

Generated wastes will be characterized according to the Sampling and Analysis Plan and as required under RCRA to determine whether they are hazardous (40 CFR 261, Subpart C and 721, Subpart C, of Title 35 of the Ill. Adm. Code). Concrete and brick have been sampled and analyzed and determined to be nonhazardous. Other solid waste will be characterized using analytical data and/or knowledge of the source material.

### **7.2.2 Waste Characterization Documentation**

Waste information will be documented on a Waste Profile Form provided by the offsite treatment or disposal facility as part of the waste acceptance process. An approved copy of the Waste Profile Form will be received prior to offsite transport. USEPA personnel will provide generator certification and/or signature. The Waste Profile Form typically requires the following information:

- Generator Name: USEPA
- USEPA ID number
- Site Name: Eagle Zinc Site
- Site Address
- Waste name or type (for example, hazardous waste and codes or universal waste)
- Activity generating waste
- Source of contamination
- Historical use for area
- Physical state of waste (for example, solid or liquid)

A copy of the approved Waste Profile Form will be provided to the waste transporter as required. The Waste Profile Form will accompany the waste material at all times. Recyclable material will be shipped using a bill of lading at a minimum.

## **7.3 Onsite Management**

All wastes will be contained in a manner that prevents the spread of contamination. Unless USEPA has designated a specific waste management area, wastes will be accumulated (and stored) at an onsite location that is under CH2M HILL control.

For purposes of this plan, containers include; drums/small containers, portable tanks, and roll-off boxes.

### **7.3.1 Hazardous Waste**

It is assumed that hazardous waste will be accumulated onsite as a large-quantity generator under the provisions in 40 CFR 262 and Title 35 Ill. Adm. Code 722). Large-quantity generator may accumulate hazardous waste for 90 days from the date of generation without an RCRA permit (40 CFR 262.34). The date of generation is the day that a waste is first placed in a container.

Hazardous wastes may only be accumulated in the following containers: drums, portable tanks, or roll-off boxes. Hazardous waste containers will be in good condition. Only nonstationary tanks (such as steel cargo tanks, wheeled tankers, or frac tanks) will be used

to accumulate liquid hazardous or potentially hazardous wastes. Containers must be compatible with the hazardous waste stored in them. Incompatible waste will not be stored near other materials unless separated from them by a berm, dike, wall, or other device.

Hazardous waste drums, portable tanks, or roll-off boxes will be labeled as follows:

- **Analysis Pending or Waste Material**—Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date.
- **Hazardous Waste**—Preprinted hazardous waste labels with the following information:
  - Accumulation start date
  - Generator Name
  - USEPA ID number
  - Waste codes
  - Prior to transport, the manifest number must be added (for containers of less than 110-gallon capacity)

Where applicable, the major hazards (e.g., flammable, oxidizer, and carcinogen) will be included on the label.

If a large quantity of residue removed from the buildings and equipment is determined to be above the toxicity characteristic limits, a cost analysis will be performed to compare the costs of offsite disposal versus construction of an RCRA Waste Pile to manage the hazardous residue. The cost comparison will be presented to USEPA to determine the preferred management method. RCRA waste piles would require a standard double liner and leachate collection and removal systems (LCRS) and a second LCRS above the top liner. The waste piles must also have run/runoff controls, be managed to prevent wind dispersal of waste, and are subject to inspection, monitoring, and release response requirements.

### 7.3.2 Universal Waste

Universal waste may be accumulated for up to 1 year from the date that the waste is generated. However, these wastes will be removed from the site no later than 90 days from the date of generation.

Containers, transport vehicles, or vessels in which unused pesticide products are contained will be labeled or marked clearly as stated in the following subsections.

#### Batteries

Batteries that show evidence of leaks, spills, or damage will be contained in a structurally sound, compatible drum or other small container. Battery storage containers will remain closed. Electrolytes removed from batteries will be managed as solid/hazardous waste.

Batteries or a container of batteries will be labeled or marked with any one of the following phrases: "Universal Waste – Battery(ies)," "Waste Battery(ies)," or "Used Battery(ies)."

#### Mercury-containing Equipment

Mercury-containing equipment with non-contained elemental mercury or that shows evidence of leakage, spillage, or damage that could cause leakage will be placed in a drum.

The drum must be closed, structurally sound, compatible with the contents of the device, must lack evidence of leakage, spillage, or damage that could cause leakage, and must be reasonably designed to prevent the escape of mercury into the environment by volatilization or any other means.

Mercury ampules will not be removed while onsite. Mercury-containing devices will be containerized and transported whole to the disposal/recycling facility. Drums of mercury containing equipment will be labeled or marked clearly with any one of the following phrases: "Universal Waste—Mercury Containing Equipment," "Waste Mercury-Containing Equipment," or "Used Mercury-Containing Equipment."

### **Lamps**

Lamps will be contained in a drum or package that is structurally sound and adequate to prevent breakage. Lamp storage containers and packages will remain closed.

Each lamp container or package will be labeled or marked clearly with any one of the following phrases: "Universal Waste—Lamp(s)," "Waste Lamp(s)," or "Used Lamp(s)."

### **7.3.3 Solid Nonhazardous Waste**

RCRA does not require removal within a specific time frame; however, these wastes will be removed from the site as soon as possible. All liquids, including decontamination water will be contained in compatible drums or portable tanks, as appropriate. Other solid, nonhazardous waste (putrescible waste) will be placed in drums or roll-offs. Only non-flowing, solid nonhazardous waste (for example, LBP debris and construction and demolition debris) may be placed in temporary storage piles.

The wastes will be labeled as nonhazardous wastes with preprinted labels containing the following information:

- Accumulation start date
- Generator name:
- USEPA ID number
- Waste-specific information (e.g., contaminated soil)

### **7.3.4 Lead-based Paint Chips**

LBP that is removed for demolition purposes (cutting of tank, piping coated with LBP), will be classified as hazardous waste. See Section 7.3.1, Hazardous Wastes.

### **7.3.5 Used Oil Time Limit, Containment, and Labeling Requirements**

Used or waste oils, used filters, and other related wastes will be placed in drums that are in good condition and not leaking. Containers used to store used oil will be labeled or marked with the words "Used Oil."

### **7.3.6 Asbestos-containing Materials**

All ACM waste is considered Illinois Special Waste and will be managed and disposed in accordance with the Title 35 Ill. Adm. Codes 807-810.

Friable or nonfriable Category II asbestos must be placed in double plastic bags and sealed or encased in two sealed layers of plastic wrap. Each bag or layer must be 6 millimeters thick or greater and boldly marked and labeled as "CAUTION: CONTAINS ASBESTOS FIBERS. AVOID CREATING DUST. CANCER AND LUNG DISEASE HAZARD." The name and address of the generator must also be marked on the container. Use of sealed cardboard containers or fiber drums may be required for dense waste or as extra protection against breaking of bags.

### **7.3.7 PCB Waste**

All PCB waste is considered Illinois Special Waste and will be managed and disposed in accordance with the Title 35 Illinois Administrative Codes 807-810 and 40 CFR 761.

#### **PCB Ballasts and Small Capacitors**

Intact, nonleaking ballasts that contain < 50 ppm PCBs and no capacitor, an intact capacitor, or a capacitor marked "No PCBs" will be segregated and stored in a drum or lined roll-off box and marked as non-TSCA waste, or equivalent.

- Ballasts that contains  $\geq 50$  ppm PCBs or any ballast with a leaking capacitor will be placed in leak-proof containers or in overpack containers and marked as PCB-containing waste, or equivalent.
- Ballasts that contain or are assumed to contain 50 ppm PCBs in the potting material, or any ballast that contains a leaking capacitor may be stored onsite for 180 days from the date of generation, as indicated under 40 CFR 761.65(c)(9) for PCB bulk product waste.

#### **Pole- or Pad-mounted Transformers**

Transformers will not be drained onsite. Any leaking transformer will be placed in an overpack container.

Transformers should be marked as to their contents. If the equipment is already marked, TSCA regulations do not allow you to remove the mark at the time of disposal.

Transformers that contain  $\geq 50$  ppm PCBs may be stored:

- For 30 days from when they are removed from service they are placed on pallets and the storage area must be marked as required in 40 CFR §761.40(a)(10) [40 CFR 761.65(c)(1)]
- In an RCRA-permitted hazardous waste storage area [40 CFR Part 761.65(b)(2)(i)]

### **7.3.8 Other Waste**

Smoke detectors and exit signs will be removed from facilities prior to demolition. Smoke detectors with radioactive sources (Am-241) will be segregated from photoelectric smoke detectors and will be further segregated by manufacturer. Smoke detectors and exit signs will be contained in sturdy boxes or other appropriate containers.

Ozone depleting substances will be evacuated (and contained) by certified technicians using equipment certified by a USEPA-approved equipment testing organization.

### **7.3.9 Construction and Demolition Debris**

Uncontaminated (or decontaminated) scrap metal, intact (nonleaking) equipment, and other bulk, nonliquid wastes or debris (putrescible waste) may be accumulated in roll-off boxes or temporary storage piles pending offsite recycling, disposal, or placement within an onsite cell. Containers or temporary storage piles will be labeled accordingly.

## **7.4 Management of Containers and Storage Piles**

The following requirements apply to onsite management of containers (drums/small containers, portable tanks and roll-off boxes) and storage piles. These requirements apply to both nonhazardous and hazardous wastes, as indicated.

### **7.4.1 Drum Management**

If transported onsite, drums (must be DOT-approved) will be transported on wood pallets and secured together with nonmetallic bonding. Adequate aisle space (approximately 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums will be no more than two drums wide. Each drum will be provided with its own label, and labels will be clearly visible.

Drums will remain covered and bolted down except when removing or adding waste to the drum, and will be disposed of with the contents.

Secondary containment will be provided for drums containing liquid waste. Where available, drums containing liquid waste will be stored under cover to provide protection from the elements.

### **7.4.2 Portable Tank Management**

For hazardous wastes, only non-stationary (i.e., portable) tanks such as a cargo tank or wheeled tank will be used, and the tanks will be provided with secondary containment. Water collected within the secondary containment will be sampled and managed accordingly.

Portable tanks will be inspected upon arrival onsite. Any tank arriving with contents, residual contamination, or deterioration will be rejected. Tanks will be provided with covers, and will remain closed and tightened except when removing or adding waste to the drum. Each tank will be provided with its own label, and labels will be visible. Tanks will not be located near a stormwater inlet or conveyance

### **7.4.3 Roll-off Boxes**

Roll-off boxes will be inspected upon arrival onsite. Any roll-off containers arriving with contents, residual contamination, or deterioration will be rejected. Roll-off boxes for contaminated or leaking materials will be provided with covers and disposable liners. Liners will be disposed of as contaminated debris. Roll-off bins will be inspected for denting and the locking bolts on the end are in place and tight. When not in use, securely fastened covers will be installed on all roll-off boxes. Old labels will be removed prior to apply new applicable labels. Roll-off containers will be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure.

#### 7.4.4 Storage Pile Management

All storage piles established during site activities will be managed in a manner that maintains good housekeeping, prevents the spread of contamination, and minimizes the potential for wildlife entrapment. Contaminated materials will be accumulated in lined storage piles.

Management activities will include the following:

- Liners and covers will be minimum 6-millimeter reinforced plastic sheeting.
- Liners will be selected based on the characteristics of the materials to be stored.
- Piles will be covered as necessary to prevent stormwater run-on and runoff. Stockpile covers will be constructed to be secure from the wind.

Storage piles may be located in buildings prior to demolition, in which case liners or covers would not be required. Building materials, including the slabs, will be decontaminated prior to demolition activities. After demolition is complete the slabs will be cleaned of debris and water washed to remove dust. Damaged or leaking equipment will not be stored in storage piles but will be containerized appropriately.

If it is determined to manage the hazardous residue removed from the buildings and equipment in an RCRA waste pile, RCRA waste piles will be constructed with a standard double liner and LCRS and a second LCRS above the top liner. Liner requirements will be selected based on residue sample results. The waste piles will also have run/runoff controls, be managed to prevent wind dispersal of waste, and will be subject to inspection, monitoring, and release response requirements.

#### 7.4.5 Inspections

Waste accumulation and storage areas will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release of hazardous substances to the environment. Containers, tanks, roll-off containers, and transformers will be inspected at least weekly (for leaks, signs of corrosion, or signs of general deterioration).

Any deficiencies observed or noted during inspection will be immediately corrected. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm.

Inspections will be recorded. Any deficiencies and corrective actions will be documented. Copies of the report will be maintained onsite and available for review.

#### 7.4.6 Security and Contingency Planning

Emergency response radios, fire extinguishers, eye wash, first aid kits and decontamination equipment will be available at the waste storage areas. Spill control equipment (for example, sorbent pads) will be available in all waste storage areas and where liquids are transferred from one vessel to another. Any contaminated spill control devices (sorbent pads, booms, and other equipment) will be characterized and placed in containers. The Health and Safety Plan identifies the specific emergency response procedures and equipment.

Waste storage areas will be secured and under CH2M HILL control. A barrier such as barricade tape or temporary fencing will be provided to prevent unauthorized access. Signs will be posted at storage areas identifying appropriate subcontractor personnel and emergency contact phone numbers.

## **7.5 Waste Transportation**

### **7.5.1 Illinois Special Waste Requirements**

Illinois special waste must be transported in accordance with Title 35 Part 809. Transporters hauling Special Waste must be permitted by IEPA. Special wastes expected to be generated are ACM wastes and PCB-containing devices/equipment. A certification requesting that other generated Pollution Control Wastes be classified as non-special waste will be submitted to the IEPA.

### **7.5.2 Waste Documentation**

Prior to offsite disposal of any waste, a waste approval package for each waste stream will be prepared. This package will include a waste profile naming USEPA as the generator of the waste, analytical summary table(s) applicable to the waste, a completed waste manifest, land disposal restriction (LDR) certification or notification for any hazardous wastes, and any other applicable information necessary for USEPA to complete its review of the disposal package and signature as the generator.

The signed profile will then be submitted to the disposal facility for acceptance and approval. Once the approval letter is received from the disposal facility, transportation can be scheduled.

### **7.5.3 Waste Manifest**

Each load of hazardous, universal, and special waste will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, and phone number, USEPA ID number
- Transporter information including name, address, contact and phone number, USEPA ID number
- Facility information including name, address, phone number, USEPA ID number
- Site name including street/ mailing address
- Proper DOT Shipping Name (e.g., Hazardous Waste Solid, n.o.s., 9, UN 3077, PG III [D008])
- Type and number of container
- Quantity of waste (volumetric estimate)
- Task order or job number

- Profile number
- 24-hour emergency phone number

In addition, special waste manifests must include:

- Information stating when and where the special waste was generated
- Name of the person from whom delivery is accepted and the name of the site from which delivered
- Permit number of the transporter
- Date of delivery
- Classification and quantity of the special waste delivered to the transporter

Each shipment of waste will also have a weight ticket. An LDR notification/certification is also required for hazardous wastes. This form also requires the generator signature and submission to the disposal facility. Any nonhazardous wastes sent offsite will also be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, and phone number
- Transporter information including name and phone number
- Facility information including name, address, phone number
- Shipping name (e.g., nonhazardous soil)
- Type and number of container
- Quantity of waste (volumetric estimate)
- Task order or job number or building number
- Profile number

Materials removed from the site for recycling will be tracked using either a nonhazardous manifest as described above, or a bill-of-lading. The generator and the transporter must sign the manifest prior to the load of waste leaving the site. The original signed manifest will be returned to the address of the generator.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, the generator must contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, the generator must issue an "Exception Report" to the State of Illinois, as required under 40 CFR §262.42.

Hazardous and Special waste manifest copies will be sent to the IEPA as follows in accordance with Section 809.501:

Every person who delivers RCRA hazardous waste or polychlorinated biphenyl (PCB) wastes to a transporter shall submit a copy of the Illinois manifest to the Agency within two days after the shipment. Every person who accepts RCRA hazardous waste or PCB waste from a transporter shall submit a copy of the Illinois manifest to the Agency within 30 days after receipt.

### 7.5.4 Land Disposal Restriction Notification

Under the RCRA LDR program, hazardous wastes that will be land disposed must meet certain treatment standards specified in 40 CFR §268.40 and §268.48. If a hazardous waste meets applicable treatment standards, in accordance with §268.7(a)(3) a signed certification stating that the waste meets the applicable treatment standards must be submitted to the disposal facility. For hazardous waste that does not meet applicable treatment standards, the treatment facility must be notified in writing (§268.7(a)(2)). This certification or notice accompanies the manifest. CH2M HILL will prepare the LDR notification or certification form for USEPA signature for all hazardous waste.

### 7.5.5 Department of Transportation Requirements

Requirements under 49 CFR 171 will apply to all offsite shipments of hazardous materials. The definition of hazardous materials includes hazardous wastes. All DOT functions will be performed by personnel trained under HM 171 (DOT requirements). The information contained in this section is provided as a general guide. Requirements specific to each hazardous material will be determined in the field. It is the responsibility of each DOT-trained individual to ensure that the requirements of 49 CFR 171 are met.

#### Shipping Name

Material that does not exhibit one of the nine DOT hazard class characteristics (for example, explosive, flammable, poison, combustible) is not regulated under DOT rules for the transportation of hazardous material. If material is suspected to be hazardous, it will be shipped under the suspected hazard class. If a particular hazard class is unable to be determined, the material may be shipped under either of the following hazard classes if it is not suspected of meeting a higher hazard class (for example, flammable, corrosive).

**TABLE 7-3**

Shipping Name

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Shipping Name	Hazard Class	ID Number	Packing Group	Label
Hazardous waste, liquid, n.o.s.	9	UN3082	III	CLASS 9
Hazardous waste, solid, n.o.s.	9	UN3077	III	CLASS 9

When using either one of these shipping names, up to two technical names will follow (for example, hazardous waste, liquid, n.o.s., benzene and acetone).

Each shipment of a suspected hazardous material will be properly classified using the Hazardous Materials Table in 49 CFR 172.101. All determinations will be made by DOT-trained personnel. Marking and labeling requirements are also included in the Hazardous Materials Table.

#### Packaging, Marking, and Labeling

The shipping name, hazard class, identification number, technical names (if applicable), USEPA markings and waste code numbers, and consignee/consignor designations will be marked on packages for shipment (49 CFR 172.301). Once the waste is characterized,

reference will be made to the Hazardous Materials Table in 49 CFR 172.101 to determine the appropriate label. Specific hazardous material packaging requirements can be obtained from CH2M HILL's online Dangerous Goods manual.

### **Placards**

Appropriate placards will be determined by DOT-trained personnel. Specific placard descriptions are found starting at 49 CFR 172.521. If a placard is required, it will be affixed on each side and each end of the vehicle.

### **7.5.6 Spill Reporting**

In the event of a spill or release of waste, the transporter must immediately notify CH2M HILL. The following information about the spill will be reported to CH2M HILL and recorded:

- Type of material (for example, soil, sludge, or water) and contaminant
- Location
- Estimated volume
- Media affected (for example, spilled on concrete pad or soil)
- Time of spill/release
- Final disposal of spilled material

The transporter will also report any spill or release of hazardous waste, as required by 49 CFR 171.15, to the National Response Center at 800-424-8802 or 202-426-2675. The transporter will also report in writing, as required by 49 CFR 171.16, to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, DOT, Washington, D.C. 20590.

For any spill of hazardous wastewater from a bulk shipment (for example, tanker), the transporter will immediately notify the National Response Center (800-424-8802 or 202-267-2675), as required in 40 CFR 263.30.

### **7.5.7 Spill Response**

The transporter will clean up any spill or release of waste (including soil or water) that occurs during transportation, or take such action as may be required or approved by federal, state, or local officials. Spilled waste will be immediately cleaned up, including soils on the outside of the trucks or other container (for example, rail car) and on the ground or road surface. Where appropriate, the spilled material (for example, soil) will be returned to the original waste container. In any case, the spilled material will be properly contained and disposed.

## **7.6 Treatment and Disposal**

Offsite treatment or disposal facilities will use the Waste Profile Form and supporting documentation (for example, analytical data) to determine whether a waste will be accepted. Note the used PPE, poly liners, etc., will be disposed of as nonhazardous waste. The following is a summary of wastes and their anticipated treatment or disposal locations.

### **7.6.1 Hazardous wastes**

Hazardous wastes that meet the LDR treatment standards will be transported to a permitted hazardous waste facility for direct disposal.

If hazardous wastes do not meet the LDR treatment standards, these wastes will be sent to an offsite facility for treatment and disposal. In some cases, the waste may be stabilized or otherwise treated to meet the LDR standards and then land disposed. All facilities that receive hazardous waste for treatment and/or disposal will be permitted under RCRA Subtitle C.

Potential RCRA Subtitle C disposal facilities with CERCLA offsite disposal approval that can accept hazardous waste include Peoria Disposal Company, Peoria, IL; Clean Harbors, multiple locations in the U.S.; and Heritage Environmental Services, Rockdale, IN.

### **7.6.2 Universal wastes**

Universal wastes will be sent to a "destination facility," as follows:

- A hazardous waste treatment, storage, or disposal facility permitted under RCRA Subtitle C
- A recycling facility that recycles the universal waste without storing that waste before it is recycled, and complies with 40 CFR 261.6(c)(2) and 40 CFR Part 273

Potential RCRA Subtitle C disposal facilities with CERCLA offsite approval that can accept universal waste include Peoria Disposal Company, Peoria, IL; Clean Harbors, multiple locations in U.S.; and Heritage Environmental Services, Roachdale, IN. Potential recycling facilities include Mercury Waste Solutions, Union Grove, WI; AERC, multiple locations in U.S.; and Fluorecycle, Inc., Ingleside, IL.

### **7.6.3 Nonhazardous Solid Wastes**

Nonhazardous solid wastes will be disposed at a permitted RCRA Subtitle D facility. It is assumed PPE, poly liners, etc., will be classified as nonhazardous waste.

Potential RCRA Subtitle D facilities with CERCLA offsite approval include Roxana Landfill, Edwardsville, IL; Milam Landfill, East St. Louis, IL; and Five Oaks Landfill, Taylorsville, IL.

### **7.6.4 Uncontaminated Trash**

Uncontaminated waste (office trash, packaging, etc.) will be placed in a trash receptacle and disposed of at a local municipal solid waste landfill.

Potential municipal landfill facilities for daily trash are Bond County Landfill, Greenville, IL; and D&L Disposal, Greenville, IL.

### **7.6.5 Used/Waste Oils and Filters**

Used oils, waste oils, and filter will be sent to recycling facility that meets the requirements of 40 CFR 279.

Potential oil recycling facilities are Gateway Petroleum, East St. Louis, IL; Heritage Environmental Services, Lemont, IL; and Rock Valley Oil and Chemical, Loves Park, IL.

### **7.6.6 Asbestos Waste**

Asbestos will be disposed in a landfill that is permitted by IEPA under 225 Illinois Compiled Statutes 207.

Potential ACM disposal facilities with CERCLA offsite approval are Milam Landfill, East St. Louis, IL; and Five Oaks Landfill, Taylorsville, IL.

### **7.6.7 PCB Waste**

Potential disposal facilities for < 50 ppm PCBs with CERCLA offsite approval include the nonhazardous facilities listed above. Potential disposal facilities for > 50 ppm PCBs with CERCLA offsite approval include the hazardous Subtitle C landfills listed above as well as incinerators owned/operated by Veolia Environmental Services, Sauget, IL; and Clean Harbors, various locations in U.S.

#### **Ballasts**

Ballasts that contain  $\geq 50$  ppm PCBs in the potting material or any ballast that contain a non-intact or leaking capacitors must be transported with a Uniform Hazardous Waste Manifest (USEPA Form 8700-22 or state equivalent) and disposed offsite as PCB bulk product waste:

- In a incinerator approved under TSCA
- In a chemical waste landfill approved under TSCA

Ballasts that contain material is < 50 ppm PCBs in the potting material and (1) no PCB small capacitor, (2) an intact, non-leaking PCB small capacitor, or (3) a capacitor marked as "No PCBs" will be transported with a nonhazardous waste manifest to an approved facility.

#### **Small Capacitors**

Intact and non-leaking small capacitors by themselves, regardless of date of manufacture or PCB concentration, may be transported without a Uniform Hazardous Waste Manifest and disposed as municipal solid waste. At a minimum they will be transporter using a nonhazardous manifest.

Non-intact or leaking capacitors must be transported with a Uniform Hazardous Waste Manifest (USEPA Form 8700-22 or state equivalent) and disposed as PCB bulk product waste: in a incinerator approved under TSCA, or in a chemical waste landfill approved under TSCA.

#### **Transformers**

Transformers that contain  $\geq 50$  ppm PCBs must be transported with a Uniform Hazardous Waste Manifest (USEPA Form 8700-22 or state equivalent) to an offsite commercial storer, recycler, or treatment facility that is approved under TSCA.

Transformers that contain < 50 ppm PCBs may be disposed as nonhazardous waste.

## PCB Oil

PCB oils at concentrations  $\geq 50$  ppm:

- Must be disposed of in an incinerator approved under TSCA, except that PCB liquids at concentrations  $\geq 50$  ppm and  $< 500$  ppm may be disposed of in a high-efficiency boiler approved under TSCA.
- Must be transported with a Uniform Hazardous Waste Manifest (USEPA Form 8700-22 or state equivalent).

PCB oils at concentrations  $\geq 2$  ppm but  $< 50$  ppm PCBs will be disposed of at a facility permitted to accept such waste, but does not need to be TSCA-approved.

PCB oils with  $< 2$  ppm PCBs are not regulated under TSCA for disposal. These oils will likely be recycled if present.

### 7.6.8 Smoke Detectors and Exit Signs

Smoke detectors with Am-241 radioactive sources and Exit signs will be returned to the manufacturer. Smoke detectors that do not contain Am-241 radioactive sources will be disposed offsite as solid waste. Disposal of the broken sign will be arranged through the manufacturer or a health physics consultant.

According to 49 CFR 173.424, packages of smoke detectors (Am-241) and exit signs (tritium) do not require specific packaging, shipping papers, markings, or labeling. However, a packing slip or notice will be enclosed on or in the package that states:

“This package conforms to the conditions and limitations specified in 49 CFR 173.424 for radioactive material, excepted package-instruments or articles, UN2910.”

The package will also bear the name and address of both the consignor (i.e., the name of the person offering the package for transport) and consignee. Packaging will be sturdy, sealed, and contain sufficient packaging material to protect the smoke detectors from damage during transport.

### 7.6.9 Construction and Demolition Debris

Nonhazardous or uncontaminated concrete and brick will be crushed and placed into the onsite cell. Construction and demolition debris will be placed in uniform lifts to the proposed waste grades as shown on the drawings for the onsite consolidation cell. Waste lift thickness will not exceed 2 feet with a maximum particle size of 1 foot. Construction or demolition debris consists of the following. Any hazardous debris will be removed for disposal offsite or placed in waste piles.

## 7.7 Training

The following subsections detail the training requirements for personnel associated with hazardous waste operations. The training requirements are applicable to both CH2M HILL and subcontractor personnel.

### **7.7.1 Hazardous Waste Operations**

Requirements for Hazardous Waste Operations and other training of onsite personnel, including subcontractors, are described in the HSP.

### **7.7.2 Waste Management**

All onsite personnel, including subcontractors, involved in waste-handling activities will be trained in those activities. All CH2M HILL personnel performing waste management activities will complete the in-house online Waste Management Training course, or its equivalent, in compliance with RCRA hazardous waste generator training requirements (40 CFR 265.16).

### **7.7.3 Department of Transportation Training Requirements**

Each individual performing a DOT function must be properly trained. DOT training requirements apply to any personnel who select packaging; prepare hazardous materials for transportation; are responsible for safety of the transportation of hazardous materials; load, unload, or handle hazardous materials; test, re-condition, repair, modify, mark, or otherwise represent containers as qualified for use in transporting hazardous materials; or operate a vehicle used to transport hazardous materials (49 CFR 172.702).

All hazardous material (HAZMAT) personnel must receive "general awareness training" to become familiar with DOT regulation requirements and recognition/identification of hazardous materials consistent with DOT hazardous materials communication standards. All HAZMAT personnel must also receive safety training on DOT emergency response communications (49 CFR 172, Subpart G), how to protect themselves from the hazards of the materials if exposed, and methods and procedures for avoiding accidents involving hazardous materials. In addition, each employee must be trained as appropriate to his or her specific job duties (function-specific training).

HAZMAT employees must be retrained every 3 years. Retraining may occur any time before expiration of the 3-year period, but not after the 3-year anniversary date of the most recent previous training.

Training records must be kept for the preceding 3 years for current employees and for 90 days after any employee leaves. Records must include the following information:

- Employee's name
- Date of most recent training
- Description, copy, or location of training materials used
- Name and address of person performing the training
- Certification of successful completion of training

## **7.8 Records and Reporting**

The following records and documents will be maintained:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data

- Manifests, land disposal restriction notifications/certifications, bills of lading, and other shipping records
- Offsite facility waste receipts and certificates of disposal/destruction
- Training records
- Inspection records

CH2M HILL will maintain MSDSs for chemicals and/or hazardous materials brought onsite, including the MSDSs for chemicals brought onsite by subcontractors. Subcontractors will maintain similar records for all onsite activities.

## SECTION 8

# Reuse / Recycling Work Plan

One of the key elements of any demolition project is the offsite disposal or recycling of the waste streams generated as a result of the demolition process. Depending on client specific requirements and desires many options are available. The table presented below lists the typical materials that are available from a demolition project and the outlets for offsite recycling.

**TABLE 8-1**

Typical Materials Available from Demolition

*Technical Work Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*

Material to be Recycled	Recycle Options Typical in the Industry
Useable structural steel and piping	Sell directly or wholesale to third party
Scrap steel, rebar, and iron	Deliver and sell to scrap processor
Non-ferrous materials (copper, aluminum, titanium, etc.) and stainless steel	Deliver and sell to scrap processor
Concrete—Processed onsite	Use in site grading if possible
Brick—Processed onsite	Use in site grading if possible
Clean Wood—unsuitable for resale	Deliver to outside shredding operation

Note: It may not be feasible to resell anything on the site due to safety considerations. In such cases, items are staged for final disposition.

Potential metals recycling facilities include:

- Mullins Salvage Yard, Mt. Olive, IL
- Ashmore Iron & Metal, Hillsboro, IL

## 8.1 Johnson Scrap Metal, Gillespie, IL—Reuse / Recycling Evaluation

During Phase I field activities, construction materials for facilities slated for demolition were evaluated to determine potential reuse/recycling options and determine the most beneficial handling of the materials. One waste stream was identified as providing a reuse/recycling value of scrap steel and iron. Scrap steel and iron will be generated during the demolition of buildings, equipment, tanks, and piping. Scrap metal quantities will be requested during the demolition bidding process.

## 8.2 Material Staging and Loading for Demolition Debris

Depending on sampling results, material resulting from demolition debris will be placed in the consolidation cell or the debris will be loaded directly into containers for offsite disposal.

### **8.2.1 Salvageable Equipment and Materials**

Salvageable equipment and materials are usually removed and stored either onsite or delivered directly to their outside destination. Temporary onsite storage should be clear of any subsequent demolition operations.

### **8.2.2 Scrap Steel, Iron, and Equipment**

Scrap steel, iron, and equipment are usually accumulated at a yard area isolated from the continuing operation. In this area, secondary processing is done to meet the requirements of the scrap buyer.

### **8.2.3 Scrap, Non-ferrous Materials**

Because of the relatively high value of scrap, non-ferrous materials, it is desirable to store them in a secure area and deliver them as a load is accumulated.

### **8.2.4 Concrete, Brick, and Asphalt**

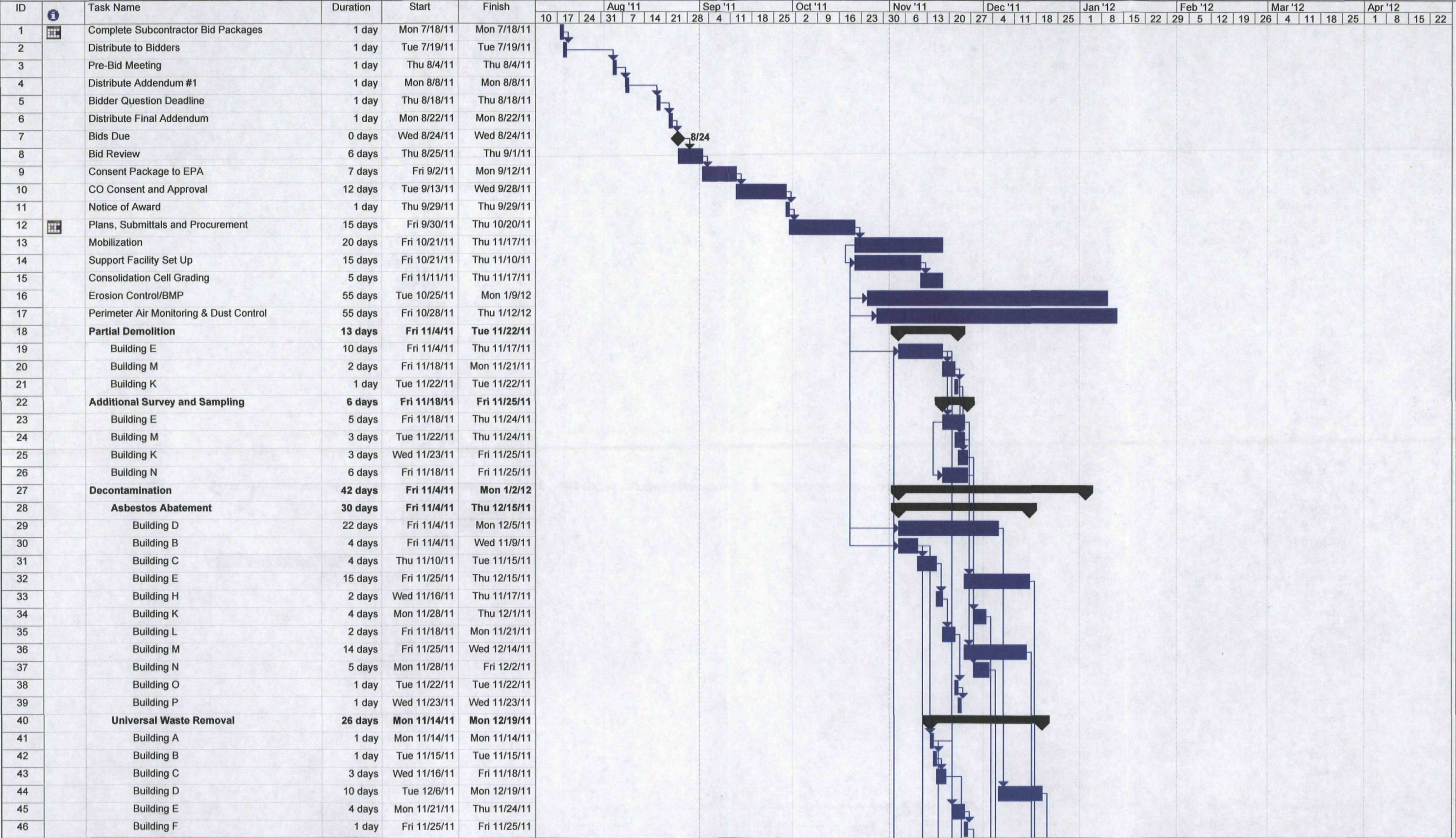
Non-putrescible debris (concrete, brick, and asphalt) has been sampled and analyzed and determined to be suitable for placement in the onsite consolidation cell. The consolidation cell will be constructed to accept non-putrescible demolition debris. The cell will be constructed before demolition begins. This will be either prior to mobilization of demolition crew or during the time that buildings are being prepared for demolition (utility disconnects, asbestos abatement, universal waste removal, and building material decontamination).

SECTION 9

# **Project Implementation Schedule**

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The project implementation schedule is shown on the following page.





ID	Task Name	Duration	Start	Finish	Aug '11				Sep '11				Oct '11				Nov '11				Dec '11				Jan '12				Feb '12				Mar '12				Apr '12										
					10	17	24	31	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	4	11	18	25	1	8	15	22	
93	AST & Foundation (1)	4 days	Wed 1/25/12	Mon 1/30/12																																											
94	AST & Foundation (2)	4 days	Tue 1/31/12	Fri 2/3/12																																											
95	Disposal	78 days	Thu 11/10/11	Mon 2/27/12																																											
96	Recycle Material - Off-site Disposal	73 days	Fri 11/11/11	Tue 2/21/12																																											
97	Process Recycle Materials	73 days	Fri 11/11/11	Tue 2/21/12																																											
98	Equipment Salvage - Off-site Disposal	30 days	Wed 1/11/12	Tue 2/21/12																																											
99	Equipment Salvage	30 days	Wed 1/11/12	Tue 2/21/12																																											
100	Waste Disposal - Off-site Disposal	41 days	Thu 11/10/11	Thu 1/5/12																																											
101	Asbestos - T&D	27 days	Thu 11/10/11	Fri 12/16/11																																											
102	Universal Waste - T&D	28 days	Tue 11/15/11	Thu 12/22/11																																											
103	Hazardous Waste - T&D	33 days	Tue 11/22/11	Thu 1/5/12																																											
104	C&D Waste Disposal - On-site	70 days	Tue 11/22/11	Mon 2/27/12																																											
105	Processed C&D Waste - On-site Landfill	70 days	Tue 11/22/11	Mon 2/27/12																																											
106	Un-processed C&D Waste - On-site Land	70 days	Tue 11/22/11	Mon 2/27/12																																											
107	Restoration/Demobilization	90 days	Tue 11/29/11	Mon 4/2/12																																											
108	Restoration	67 days	Tue 11/29/11	Wed 2/29/12																																											
109	Consolidation Cell Cap	20 days	Tue 2/28/12	Mon 3/26/12																																											
110	Demobilization	27 days	Fri 2/24/12	Mon 4/2/12																																											

Project: 403933 Eagle Zinc\_Demolition  
Date: Tue 6/21/11

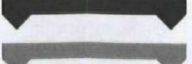
Task  
Split



Progress  
Milestone



Summary  
Project Summary



External Tasks  
External Milestone



Deadline



## SECTION 10

# Demobilization and Closure Plan

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Following the decommissioning and demolition, the various sites will be restored. Restoration activities include the following:

- The remaining concrete foundations will be cleaned of fine demolition debris and water washed to remove dust.
- The ground at and around demolished structures will be graded to match the existing grade and to minimize the channeling of water and subsequent erosion. Crushed material will be used to stabilize these areas.
- Existing roads, driveways, sidewalks, and pad foundations will be left in place.
- Debris and trash will be removed.

Following the completion of all activities at each facility (demolition, removal of debris, revegetation, and cleanup) a final site walk-through will occur with USEPA, CH2M HILL, subcontractor, and other representatives as applicable. The site walk-through may result in a punchlist of action items. Once the punchlist work is completed at each facility, a re-inspection will be conducted and the date noted, followed by signatures of CH2M HILL, subcontractor, and USEPA personnel documenting that the work at the facility has been completed.

CH2M HILL will submit the Final Report for Decontamination and Demolition to USEPA after completion of the project activities. The Final Report will include information that demonstrates the decommissioning and demolition objectives were met. Quantities of hazardous waste, nonhazardous waste, recyclable materials, and other such items will be included in the report. A discussion of the environmental benefits of recycling or reuse will be included. The calculator available at [epa.gov/warm](http://www.epa.gov/warm) or [http://www.epa.gov/climatechange/wycd/waste/calculators/Warm\\_home.html](http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html) will be used for this benefit discussion.

SECTION 11

## References

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Goodwin & Brooms, Inc. 1999. *Monitoring Well Installation and Ground Water Sampling Interim Report*. March.

Environ. 2005. *Remedial Investigation Report, Eagle Zinc Company, Hillsboro, Illinois*. February.

U.S. Environmental Protection Agency (USEPA). 2001. *Revisions to the PCB Q and A Manual*, September.

[illegible]

# **Hazardous Materials Survey Report**

**Eagle Zinc Superfund Site  
OU1 – Building Demolition  
Hillsboro, Illinois**

**Prepared for:**

**CH2M Hill  
1034 S. Brentwood Blvd., Suite 2300  
St. Louis, MO 63117**

**Prepared by:**

**Environmental Design International, inc.  
33 W. Monroe Street  
Suite 1825  
Chicago, Illinois 60603  
EDI Project No. 1515.017**



Approved for Release October 2010 DRAFT By:

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Patricia Feeley, P.G.  
Senior Project Manager

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Gary P. Flentge, MPH, LEHP, REA  
Principal Environmental Health Professional





*Environmental Design  
International inc.*

33 W. Monroe St., Suite 1825  
Chicago, Illinois 60603  
phone: 312.345.1400  
fax: 312.345.0529  
[www.envdesigni.com](http://www.envdesigni.com)

October 18, 2010

Ms. Lisa Cundiff  
CH2M Hill  
1034 S. Brentwood Blvd., Suite 2300  
St. Louis, MO 63117

**Subject: Hazardous Materials Survey Report  
Eagle Zinc Superfund Site  
OU1 – Building Demolition  
Hillsboro, Illinois  
EDI Project Number: 1515.017.03**

Dear Ms. Cundiff:

Enclosed please find two hard copies of the Hazardous Materials Survey Report for OU1 of the Eagle Zinc Site in Illinois. Please feel free to call me at (312) 345-1400 extension 136 or Mr. Gary Flentge at extension 143 for any assistance. Thank you.

Respectfully,

**Environmental Design International, inc.**

Patricia Feeley, P. G.  
Senior Project Manager



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## **Executive Summary**

Environmental Design International inc. (EDI) was retained by CH2M Hill under purchase order number 938882 as part of Remedial Design work for the United States Environmental Protection Agency (USEPA). EDI was asked to evaluate the site and collect samples to determine building components that would need to be handled as hazardous waste during building demolition.

The field survey was conducted from August 23 through August 27, 2010, by Mr. Jose Aguilera, an IDPH-licensed Asbestos Inspector ID# 100-10088, Ms. Kristen Templin, an IDPH-licensed Asbestos Inspector ID# 100-18364, Mr. Paul Kybartas, an IDPH-licensed Asbestos Inspector ID# 100-08451 and IDPH-licensed Lead Risk Assessor ID# 006379, and Ms. Patricia Feeley.

### **Background**

The site is an abandoned industrial plant in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. See attached Site Location Map. There are about 23 buildings onsite that were previously used for facility operations; the types of buildings include offices, laboratories, manufacturing/processing, equipment/raw material/finished product storage, bag houses and maintenance facilities. The buildings and site have been abandoned for many years. The site is fenced and the gate is locked. The buildings are in various states of deterioration, some buildings have collapsed ceilings or partial walls.

The USEPA has divided the site into two operable units (OUs) to effectively deal with the short term risks, lead in buildings, the long term risks, and contaminated soil and groundwater on-site. This Remedial Design is focused on OU-1, targeting building demolition. The selected remedy for OU-1 consists of the following components:

- Building demolition – all buildings and associated above ground structures on-site will be removed via controlled demolition
- Asbestos containing material (ACM) and hazardous materials survey for disposal will be conducted and include universal wastes, PCB-containing devices, and lead-based paint (LBP) coated materials. ACM, universal wastes, and PCB-containing devices will be properly removed and disposed of off-site. LBP-coated debris will be evaluated for proper disposition. For example, LBP on metal will not be removed but recycled in total as scrap metal.
- Recycling - Salvageable material will be recycled or reused. Proceeds from recycling will be used to off-set the cost of the remedy.
- Putrescible wastes or unsalvageable materials will be characterized and properly disposed of off-site.
- On-site consolidation - Remaining debris will be consolidated and placed in the southwest corner of the site.
- Soil cover – a one-foot soil cover will be placed as a barrier over the contaminated building debris consolidated on-site

In preparation to perform the requested scope of work, CH2M Hill and EDI collaborated to prepare Site Specific Plans for approval by USEPA. A Quality Assurance Project Plan (QAPP), a Field Sampling Plan (FSP), and a Health and Safety Plan (HASP) were submitted and approved by USEPA. The hazardous materials survey included a building survey of asbestos containing materials (ACM), lead-based paint (LBP), and residuals on building components. The FSP identified the sampling methods and approach for the environmental survey.

### **Asbestos Containing Materials Survey**

The EDI inspection team performed a visual survey to identify suspect ACM in accessible areas of the buildings. The ACM survey did not include areas that were not visible or accessible due to collapsed ceilings, structurally unsound buildings, other safety or security issues, or that were behind walls or otherwise inaccessible. The Site Layout figure identified Buildings A through P for the survey.

The following materials were determined to be ACM and are assumed ACM for all the buildings:

- Roofing materials
- Window paper covering, caulks and glazings, and door caulks.

These ACM building components were generally in poor condition and spread around the foot print of the building. Asbestos abatement design and planning must consider the impact of non-intact ACM. These materials would be considered Category I non-friable asbestos.

Other ACMs were building specific and included pipe insulation, floor tiles, mastics, and transite.

- Building C (north wall center) – pipe sealant
- Building H2 – air cell pipe insulation
- Building L1 – lab tops
- Building M (garage engineer office west) – air cell thermal system insulation
- Building M (break room) – transite ceiling
- Building N (office) – tan, brown, and grey floor tile and mastic
- Building N (office) – transite ceiling panels

These ACM building components were generally intact and in the interior of the buildings. The ACM is generally in poor condition. The ACMs are Category II friable and require abatement in containment prior to demolition.

ACM must be abated by an IDPH-licensed contractor using IDPH-licensed supervisors and workers, prior to building demolition. A site-specific asbestos abatement design is recommended and should be prepared under the direction of an IDPH-licensed asbestos project designer.

- Abate ACM noted pipe insulation, transite (ceiling and lab tops), and floor tile with mastic. However, Building N should be further assessed for mercury contamination on the building

interior prior to abatement activities.

- All ACM's abated from Eagle Zinc shall be transported in a manner consistent with local and federal regulations.
- All ACM abated from Eagle Zinc shall be disposed of in an approved landfill or disposal facility in a manner consistent with local and federal regulations. A copy of the disposal documentation signed by a landfill or disposal facility representative shall be included in the final abatement report submitted to the USEPA by the abatement contractor within 30 days of completing abatement.

### **Lead-Based Paint Survey**

The LBP survey was conducted using an x-ray fluorescence (XRF) analyzer, an Innov-X Alpha series 4000 XRF Analyzer. The XRF analyzer was used on interior and exterior painted surfaces. Painted surfaces that indicate a lead concentration of equal to or greater than 1.0 mg/cm<sup>2</sup> of surface area are considered to be LBP as defined by HUD. Painted surfaces throughout several buildings were observed to be in poor condition with significant areas of peeling paint.

The following building components were found to contain LBP:

- Concrete and brick surfaces (interior and exterior);
- Wood doors and frames, and other wood surfaces;
- Plaster surface in Building L1;
- Various metal building and production components.

Painted surfaces had positive and negative XRF results. Not all concrete, brick, wood, plaster or metal surfaces had LBP. In general, some common characteristics for positive LBP results included the following:

- Grey paint across the buildings (A, B, C, D, I, J, M, and P) had positive lead content.
- White paint across the building tested more than 50% positive for lead (suspect paint that should be checked).
- Peeling white paint in Building D1 production area is presumed to be LBP based on positive lead readings for the paint at the bottom of the board walk.
- Red paint in buildings B, D1, and F1 tested positive for lead. Other paint colors had mixed positive and negative lead results.
- Concrete and cinder block (Building C) had positive lead readings.

Workers who handle LBP coated building components must be protected from exposure following OSHA regulations. LBP building components may not require remedial or mitigation during demolition. Measures for dust control should be in place prior to demolition activities. However, recycling activities may require remedial action or mitigation, in order to recycle concrete or brick. Remedial action or mitigation may include scraping and removal of residual and dust and a washing to remove contaminants from recyclable material.

The survey focused on building materials that will be removed as part of demolition and will be recycled or handled on site. Sampling to determine hazardous characteristics is required to

determine best practices for the recycling of the material or the disposal of the material: on-site or off-site. Peeling paints were found to be present extensively in Building D and the peeling paint is presumed to be LBP, flaking paints present a potential dust hazard during demolition of the buildings. Lead paint chips and dust should be managed and minimized during all demolition activities. Product residuals, dust and paint chips should be collected and containerized for proper removal and disposal.

The estimated quantities of LBP on building demolition components are not included herein. Further discussion and review of demolition and disposal options are required to provide useable estimated quantities that are pertinent to project progression. Additional field quantification should be provided for LBP based on remedial action decisions that will require LBP abatement, versus allow LBP to remain on components for disposal on-site and/or off-site.

### **Residuals Survey**

The buildings have residual product, waste and/or dust throughout the interior and exterior of the buildings. A sample of residual product or waste was collected from various building components. For example, production kilns and product storage were identified throughout Buildings C, D1, I, and J. The demolition of these buildings will disturb and impact the product or waste materials remaining in the building and adhering to production elements, walls, floors, and ceilings.

Residual product and brick in Buildings B, C, D1, and P1 had lead concentrations exceeding the Toxicity Characteristic. Samples of white product from Building D at the north end in the production area, had TCLP of 6 mg/L and 22.7 mg/L. Two of the three white product samples collected from this area were above the Toxicity Characteristic for lead.

The other TCLP metal results did not identify arsenic in the samples tested. High levels of zinc were observed in the total and TCLP sample results. Cadmium TCLP results were reported at levels exceeding the Toxicity Characteristic of 1.0 mg/L in several samples. White product samples from Building D were identified at 3.47 mg/L cadmium and 12.8 mg/L cadmium, both exceeding Toxicity Characteristics.

In summary, the residual product (and product adhered to building materials) should be considered a hazardous waste (based on TCLP lead and cadmium results). The residual product should be collected and disposed as hazardous waste on-site or off-site as appropriate. The building materials, including brick and concrete, will be further sampled to identify if the hazardous characteristic is only on the surface of the material or if the metals have penetrated the material. The additional sampling will determine if the brick or concrete en mass should be considered hazardous or non-hazardous waste. Concrete and brick identified as non-hazardous can be disposed and buried on site. These materials would require some level of abatement or decommissioning to remove the hazardous dust or residuals on the surface. Materials should be tested for TCLP lead and cadmium at a minimum.

Existing thermostats should be checked or removed prior to demolition activities. Existing thermostats or thermometers were observed in the production buildings and may contain mercury. Existing lighting ballasts are located throughout the buildings and accessible ballasts were viewed for labels. Labels on ballasts indicated non-PCB containing lighting. Lighting ballasts, not labeled, should be assumed to contain PCBs or tested prior to demolition to confirm non-PCBs containing. Universal wastes throughout the buildings should be handled in accordance with IAC Title 35 Part 733.

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## **1.0 Introduction**

Environmental Design International inc. (EDI) was retained by CH2M Hill under purchase order number 938882 as part of Remedial Design work for the United States Environmental Protection Agency (USEPA). EDI was asked to evaluate the site and collect samples to determine building components that would need to be handled as hazardous waste during building demolition.

The field survey was conducted from August 23 through August 27, 2010, by Mr. Jose Aguilera, an IDPH-licensed Asbestos Inspector ID# 100-10088, Ms. Kristen Templin, an IDPH-licensed Asbestos Inspector ID# 100-18364, Mr. Paul Kybartas, an IDPH-licensed Asbestos Inspector ID# 100-08451 and IDPH-licensed Lead Risk Assessor ID# 006379, and Ms. Patricia Feeley,. Licenses and certifications are provided in Appendix A.

### **1.1 Project Purpose and Background**

The site is an abandoned industrial plant in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. See attached Site Location Map. The site is approximately 132 acres, with about 30 acres of buildings and associated structures. There are about 23 buildings onsite that were previously used for facility operations; the types of buildings include offices, laboratories, manufacturing/processing, equipment/raw material/finished product storage, bag houses and maintenance facilities. Also located on site are railroad spurs, residual material, two storm water retention ponds, a small pond and several roads. Active industrial operations ceased in 2003. The area has been zoned commercial/industrial. See Figure 2 for Site Layout Map, which identifies the Buildings as A through P.

Previous investigations have taken place since the early 1980's. The initial Remedial Investigation started in 2001 and a draft RI Report was produced in 2005. The previous investigations show multiple residue piles throughout the site that exceed screening levels. The contaminants of concern on site include lead and cadmium. Other contaminants on-site include copper, zinc, and manganese. In 2008, the buildings and associated structures on site were sampled via XRF and revealed significantly high levels of lead concentrations in, on, and around the building structures. This sampling event led to the USEPA decision to complete an interim action to address the immediate threat posed by the buildings. A removal action was conducted in January 2009 to quickly mitigate site access and exposure; the action consisted of fence installation around the most accessible areas of the site.

The USEPA has divided the site into two operable units (OUs) to effectively deal with the short term risks, lead in buildings, the long term risks, and contaminated soil and groundwater on-site.

This Remedial Design is focused on OU-1, targeting building demolition. The selected remedy for OU-1 consists of the following components:

- Building demolition – all buildings and associated above ground structures on-site will be removed via controlled demolition

- Asbestos containing material (ACM) and hazardous materials survey for disposal will be conducted and include universal wastes, PCB-containing devices, and lead-based paint (LBP) coated materials. ACM, universal wastes, and PCB-containing devices will be properly removed and disposed of off-site. LBP-coated debris will be evaluated for proper disposition. For example, LBP on metal will not be removed but recycled in total as scrap metal.
- Recycling - Salvageable material will be recycled or reused. Proceeds from recycling will be used to off-set the cost of the remedy.
- Putrescible wastes or unsalvageable materials will be characterized and properly disposed of off-site.
- On-site consolidation - Remaining debris will be consolidated and placed in the southwest corner of the site.
- Soil cover – a one-foot soil cover will be placed as a barrier over the contaminated building debris consolidated on-site

## 1.2 Work Plan

In preparation to perform the requested scope of work, CH2M Hill and EDI collaborated to prepare Site Specific Plans for approval by USEPA. A Quality Assurance Project Plan (QAPP), a Field Sampling Plan (FSP), and a Health and Safety Plan (HASP) were submitted and approved by USEPA. The hazardous materials survey included a building survey of asbestos containing materials (ACM), lead-based paint (LBP), and residuals on building components. The FSP identified the sampling methods and approach for the environmental survey. The scope of work was identified as follows:

- A. EDI performed an asbestos survey to determine and quantify ACM in accessible areas within the buildings interior and exterior. The ACM survey was performed in compliance with Environmental Protection Agency (EPA) guidance document, Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials (EPA 560/5085-030a, October 1985). The regulations include National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 Code of Federal Regulations (CFR) Part 61.145. The work met the requirements specified in the NESHAP regulations to identify asbestos containing building materials (ACBM) in industrial, commercial and public buildings. The ACM survey included the following activities:
- Review of existing environmental documents (no ACM surveys were provided);
  - Visual inspection of all accessible areas of the buildings;
  - Collection of three suspect ACM bulk samples per homogeneous material in accessible areas of the buildings;
  - AIHA and NVLAP accredited laboratory analysis of suspect ACM bulk samples by polarized light microscopy (PLM) to first positive result per homogeneous material;

- Preparation of a final report that includes photographs of representative ACM and the laboratory's analytical report.
- B. EDI performed a LBP survey of painted walls, doors, building components, and windows throughout the interior and exterior of the accessible buildings. EDI tested metal, wood, concrete, and other painted surfaces using an x-ray fluorescence (XRF) analyzer to determine lead concentrations. EDI focused on areas of peeling paint and building components that would require abatement prior to recycling or disposal, due to LBP. Flaking and peeling LBP creates a hazard for lead dust that will require paint and dust management during demolition. Painted surfaces were classified into homogeneous areas and EDI collected three readings from each of the homogeneous areas on the accessible surfaces of the building components. The XRF is a non-intrusive and direct read instrument. The survey included the following activities:
- Visual inspection and physical assessment of all accessible areas;
  - Analysis of appropriate components using an XRF;
  - Paint chip samples were collected for quality assurance at appropriate intervals;
  - Preparation of a final report that includes photographs of representative XRF test locations, a summary of results, inspector's qualifications, and XRF data.
- C. A field investigation was conducted of the building components with residual product that would impact demolition activities. Residual product (i.e. powder or cement like) was in the kilns, hoppers, and prevalent throughout the production buildings. The survey included the following activities:
- Visual inspection and physical assessment of all accessible areas in the buildings;
  - Sampling and analysis of residuals on building components;
  - Preparation of a final report that includes photographs of representative residual samples, locations, a summary of results, and laboratory data.
- D. EDI reviewed the buildings for lighting, electrical switches, and transformers that have been installed in the building prior to 1990. Electrical equipment installed post 1990 are not expected to have mercury or PCBs in their fluid components. Lighting or electrical switches installed prior to 1990 were observed for obvious signs of PCBs or mercury content. No sampling was anticipated for this environmental survey.

See the Site Specific Plans for a full description of the scope of work and the sample plan. The client provided background data was focused on soil, groundwater, and residual pile investigations exterior to the buildings.

### **1.3 Safety Issues**

The buildings and site have been abandoned for many years. The site is fenced and the gate is

locked. The buildings are in various states of deterioration, some buildings have collapsed ceilings or partial walls. Some buildings have cracks or falling bricks from the walls. For the purpose of the survey, the buildings were grouped and labeled A through P. Building E was considered structurally unsound and no investigation of building materials was conducted on the interior or exterior due to the poor building condition. Building F had several feet of water on the floor and the interior was not surveyed or sampled. Building K had falling bricks, cracks in the walls, and a collapsed ceiling, this building was not surveyed on the interior. Portions of remaining buildings deemed unsafe were not entered or surveyed. Roofs were considered structurally unsound, and all sampling was conducted from a hydraulic powered lift. Similar building materials were observed across several buildings and assumptions were used to group buildings and materials as part of the survey.

A site walk through in April 2010 identified an office building (Building N) with broken lab equipment including mercury spill kits. As part of safety, EDI used a Lumex to screen the interior of the office building for evidence of mercury vapors. Mercury readings were identified in the north area of the office building and this area was determined unsafe for sampling activities.

#### **1.4 Regulations**

The following regulations are considered as part of this assessment. These regulations impact the demolition of buildings at this site.

Asbestos removal is regulated in Illinois Administrative Code Title 77 Section 855.220 IDPH Notification and Procedures for Abatement of Asbestos in Commercial and Public Buildings. Codes of Federal Regulations (CRF) governing asbestos include 29 CFR 1910.1001 OSHA, 29 CFR 1910.20 OSHA General Safety and Health Provisions, and 40 CFR 61 Subpart M National Emissions Standards for Hazardous Air Pollutants (NESHAP) and 40 CFR Part 763 Asbestos. The NESHAP regulations define asbestos into Category I and II materials and into friable and non-friable categories. Category I material is defined as asbestos-containing resilient floor covering, asphalt roofing products, packings and gaskets. Asbestos-containing mastic is also considered a Category I material (EPA determination - April 9, 1991). Category II material is defined as all remaining types of non-friable ACM not included in Category I that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable asbestos-cement products such as transite are an example of Category II material. The asbestos NESHAP specifies that Category I materials which are not in poor condition and not friable prior to demolition do not have to be removed, except where demolition will be by intentional burning. However, regulated asbestos-containing materials (RACM) and Category II materials that have a high probability of being crumbled, pulverized, or reduced to powder as part of demolition must be removed before demolition begins. Since demolition activities do not include sanding, grinding, cutting, or abrading, Category I asbestos-containing roofing materials not in poor condition and not friable are not considered RACM and are allowed to remain in place during demolition. This information can be found on the EPA website for Region 5 under Air and Asbestos.

Lead hazards are defined in the Toxic Substance Control Act (TSCA) Section 401 and 403 Lead; Identification of Dangerous Levels of Lead. Lead-based paint (LBP) is defined as a hazard and is particularly dangerous to children. Lead hazardous waste is defined in 40 CFR Part 261 at a concentration of 5mg/L by toxicity characteristic leaching procedure (TCLP). TCLP sample results are compared to 40 CFR Part 261.30 Table 1 Maximum Concentration of Contaminants for the Toxicity Characteristic for D008 Lead, which is 5 mg/L. This table lists a maximum cadmium concentration of 1.0 mg/L and a maximum arsenic concentration of 5 mg/L. Scrap metal recycling has some exemptions from the hazardous waste regulations as defined in 40 CFR 261. However, 40 CFR 268.34 presents an alternative definition for toxicity characteristic metal wastes related to mineral processing operations. This regulation refers to Universal Treatment Standards published in 40 CFR 268.48, where the lead limit is listed as 0.75 mg/L for TCLP analysis. The 40 CFR 261.34 (1)(f) states, "If the waste contains constituents ... in excess of the applicable Universal Treatment Standards ..., the waste is prohibited from land disposal".

Zinc is a naturally occurring metal and is not listed with a Toxicity Characteristic under 40 CFR 261.30, but it is listed under Universal Treatment Standard for a maximum concentration of 4.3 mg/L. However, 40 CFR 261.3 definitions of hazardous waste identifies slag, resulting from high temperature metals recovery (HTMR) processing in units identified as rotary kilns, with a zinc maximum concentration of 70 mg/L. This definition is similar and may be applicable to the material observed at the Eagle Zinc site. For comparison, 70 mg/L will be considered the maximum concentration for toxicity of zinc.

Total metal results were compared to the Illinois Administrative Code Title 35, Part 742 Tiered Approach to Corrective Action Objectives (TACO) for construction worker (CW) remedial objectives. The remedial objectives for CW are primarily based on an ingestion exposure pathway. The CW objective for lead is 700 mg/kg, for zinc is 61,000 mg/kg, and for Cadmium is 200 mg/kg.

## 2.0 Asbestos Survey

During the asbestos survey, EDI representatives performed a visual inspection of each accessible building to identify suspect ACM. EDI representative credentials, including license and certification are provided in Appendix A. The ACM survey did not include areas that were not visible or accessible due to collapsed ceilings, structurally unsound buildings, other safety or security issues, or that were behind walls or otherwise inaccessible. A Site Layout for Survey was prepared as Figure 1 on the FSP. The Site Layout identified Buildings A through P for the survey. Some building groups had more than one building and buildings were labeled D1, D2, D3, etc. A photograph log of the survey is provided in Appendix B for review.

### 2.1 Asbestos Survey Methodology

The ACM survey was performed in accordance with the United States Environmental Protection Agency (USEPA) *Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials* (USEPA 560/5085-030a, October 1985). Similar building components were grouped into homogenous sampling areas (HSAs). HSAs are areas containing materials that are similar in color, texture, and general appearance, and which appear to have been uniformly installed during the same time period. The asbestos sampling focused on bricks, mortar, concrete patching, window caulks, window glazing, door caulks, floor or ceiling tiles, insulations (tank or piping), transite, and roofing materials. Roof materials were collected using an hydraulic powered lift. Roofs were considered structurally unsound for all the buildings. The materials were collected to sample all layers on a building component, for example a floor material sample may contain floor tile and mastic, and possibly consist of multiple layers. The laboratory analyzed multi-layer samples separately.

Bulk samples of suspect ACM were collected using wet sampling methods with a sample cutter, as appropriate, to collect a cross-section of the suspect ACM. Sample collection tools were decontaminated after each sample by washing with soap and water and dried by disposable towels to avoid cross contamination. Bulk ACM samples were placed into clean unused bags marked with a unique sample identification number. For each sample, the identification number, brief material description, location, condition and estimated quantity of suspect ACM were recorded on a bulk sample log sheet. Photographs were taken of representative HSAs.

Chain-of-Custody (COC) procedures were followed for the ACM survey. These procedures provide a written tracking mechanism that lists the person responsible for the sample from collection to delivery to the laboratory. Sample identification numbers, sample locations, and material descriptions were recorded on the chain-of-custody forms. The COC forms are provided with the laboratory sample reports.

All samples were analyzed by International Asbestos Testing Laboratories (IATL) in Laurel, New Jersey, a National Voluntary Laboratory Accreditation Program (NVLAP) accredited asbestos laboratory. Samples were analyzed by polarized light microscopy (PLM) supplemented

with dispersion staining. PLM utilizes a light microscope equipped with polarized filters (USEPA Method 600/R-93/116). No TEM samples were analyzed during this survey.

## 2.2 Results

The following summarizes materials identified to contain asbestos: various roofing materials; window glazing; window caulk; door caulk; pipe sealants; air cell pipe insulation; Transite lab tops; floor tiles and associated mastics; and, transite ceiling (office type buildings). The following ACM was found in each building.

<b>HAS/Sample No.</b>	<b>Material Description</b>	<b>Location</b>	<b>% Asbestos</b>	<b>Estimated Quantity</b>
A-B-HA5-15	Window asphalt paper	Window coverings on Building B	8.7	Windows: 10'x5' 12 windows per side, estimate 50 windows. 2,500 square feet
A-B-HA6-18	Black mastic on metal roof	Roof of tin building at east end of Building B	1.2	Tin Building estimated as 100' x 10' 1,000 square feet
A-C-HA7-20	Window glazing	Building C	2.8	Estimate 12 windows per side.
A-C-HA8-22	Window caulk	Building C	4.2	NA
A-C-HA16-47	Pipe sealant	North wall center, Building C	2.6	3 linear feet
A-D2-HA17-48	Roof sealant	Building D2	25	All roofs D2-D5
A-D1-HA22-65 & 67	Roof tar	Building D1	1.5 & 2.2	Roof on Building D1
A-D1-HA25-76	Window glazing	Exterior windows on Building D1	3.6	Exterior window glazing on Building D1
A-D1-HA27-82	Roof	Roof at south end of Building D1 at walkway between production building and south end.	2.1	NA
A-H2-HA37-114	Pipe insulation – air cell	Building H2	85	10 linear feet
A-K-HA32-98	Roofing	Building K	1.2	NA
A-L1-HA40-124	Window caulk	Building L1	5.3	200 linear feet
A-L1-HA40-124	Window glazing	Building L1	1.4	NA
A-L1-HA44-136	Door caulk	Building L1	1.3	60 linear feet

<b>HAS/Sample No.</b>	<b>Material Description</b>	<b>Location</b>	<b>% Asbestos</b>	<b>Estimated Quantity</b>
A-L1-HA45-139	Lab tops	Building L1 interior	20	Lab tops: 10'x3' with 10 in the building. 300 square feet.
A-L1-HA48-152	Roof	Building L1	4.4	NA
A-M-HA66-210 & 214 & 217	Roof flashing, multiple layers, and caulking	Building M	1.1-1.3	NA
A-M-HA69-219	Thermal system insulation – air cell	Building M – garage engineer office west	55	20 linear feet
A-M-HA70-222	Transite	Building M – break room	25	7500 square feet (ceiling)
A-M-HA77-244	Door caulk interior	Building M – garage door north	1.7	NA
A-N-HA49-158, 161, 164, & 170	Floor tile and mastic (12"x12")	Building N –office tan, brown, and grey	2.1-10	1200 square feet
A-N-HA55-176	Transite ceiling panel	Building N - office	20	150 square feet
A-N-HA56-179	Window glazing	Building N - exterior	1.2	NA
A-O-HA59-188	Roof caulk	Building O	15	NA
A-O-HA63-201	Window caulk	Building O - exterior	1.4	NA
A-P1-HA81-257	Window caulk	Building P1	1.5	NA
A-P1-HA82-260	Door caulk	Building P1	3.1	NA
A-P1-HA85-269	Roof	Building P1	5.3	NA

Note: NA – Not Available based on the poor condition of the roofs and windows and the extent of the material that could be spread around the buildings.

A summary of the materials sampled for asbestos, and asbestos sample results can be found in Appendix C. The laboratory reports are attached is Appendix C with the COCs and laboratory certification.

Roof materials at the following buildings have ACM: Building B, Building D (D1-D5), Building K, Building L1, Building M, Building O, and Building P. Roof samples from Building N did not have asbestos detections. Building E was not sampled, due to the collapsed nature of the building. Based on the roof sample results across the site, the roof materials should be assumed ACM Category I nonfriable for the purpose of demolition planning.

Window caulks and glazing were found to have ACM across numerous buildings. Building M had some window glazing samples that were non-detect for asbestos. Based on a representative

sampling of window caulks and glazing across several buildings, the window caulks and glazing should be assumed to contain asbestos. However, the windows for most of the buildings are broken and glazing and caulks are not intact. Shattered windows, caulks, and glazing are widely spread around the foot print of each building. Asbestos abatement of the windows will need to address the approach for abating intact versus shattered windows. Door caulks will be handled similarly, with the assumption that door caulks contain asbestos.

Other materials containing asbestos include pipe insulation, transite, and floor tiles, which can be found building specific and generally in poor condition. Gross removal with containment will be possible to address these more friable materials.

### **3.0 Lead Based Paint Survey**

#### **3.1 Lead Based Paint Survey Methodology**

The LBP survey was conducted utilizing a modified assessment plan following the U.S. Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (1995 and 1997 Revision). An x-ray fluorescence (XRF) analyzer was used for this survey.

The XRF survey was conducted with an Innov-X Alpha series 4000 XRF Analyzer, which uses an X-ray tube source. The XRF analyzer was used on interior and exterior painted surfaces that were determined to be HSAs. HSAs are materials that are similar in color, texture, and general appearance, and which appear to have been painted during the same time period. Painted surfaces that indicate a lead concentration of equal to or greater than 1.0 mg/cm<sup>2</sup> of surface area are considered to be LBP as defined by HUD. Calibration checks of the XRF analyzer were performed prior to the morning and afternoon shifts. The XRF analyzer provides immediate positive or negative result readings of the painted surface which are then recorded on to a data log sheet.

HUD guidelines define LBP as paint containing 0.5 percent or greater lead by weight (when calculated as lead metal in a dried solid form), 5000 milligrams per kilogram (mg/kg), or equal to or greater than 1.0 mg/cm<sup>2</sup> using XRF instrumentation. Paint chip samples were collected for quality control analysis every 10 HSAs. The paint chips were placed in a sample container vial and submitted to the laboratory under proper chain of custody. Paint chip samples were submitted to CRL for analysis of total lead.

#### **3.2 Results**

The results were logged per building and multiple surfaces and materials were assessed. Painted surfaces throughout several buildings were observed to be in poor condition with significant areas of peeling paint. XRF data sheets and XRF results are provided in Appendix D.

##### **Building A**

The painted surfaces in Building A included the metal support beams and the wood door frame, both tested positive for LBP, (grey paint).

##### **Building B**

The painted surfaces in Building B included wood, wall joists, concrete walls, wood door frames, and corrugated metal. Each of the substrates tested had a positive reading for lead, (red and grey paints).

##### **Building C**

The painted surfaces in Building C included cinder block and particle board walls, wood frame and ceiling, metal walls, door frames, kilns, and production elements. In Building C, the only

paint testing positive for lead was the grey paint on the cinder block walls (near the building entrance). Some painted metal and wood surfaces did not test positive for LBP.

#### Building D - Group

The painted surfaces in Building D included wood and concrete doors; production elements; concrete walls; metal board walks, stairs and support beams; and wood window frames. Numerous painted surfaces tested positive for lead including grey painted wood window and door frames. The grey metal hopper and grey painted walk both tested positive for lead. The white metal stairs tested positive for lead. The south room had white LBP on wood ceiling, wall, and joists. In general, the grey paint tested positive for lead. The blue, yellow, red, and green paints on production elements and other surfaces tested negative for lead. The wood door frames on each of the buildings D2-D5 tested positive for lead. On building D5, the grey paint with yellow under on the window frame and wall tested positive for lead. The red metal wall also tested positive for lead.

#### Building F

Building F had grey paint on metal and wood that tested negative for lead. The red paint on the metal hopper tested positive for lead.

#### Building G

Building G tested negative for LBP on metal walls and support beams.

#### Building H - Group

Building H (three different small buildings) had a positive reading for a white brick wall. Building H2 had a metal door and window frame, brick wall and wood door; all test positive for lead on white paint. Building H3 had a white exterior window frame test positive for lead.

#### Building I - Group

Building I1 had no positive lead readings. Building I2 had grey paint on metal support beams and wood door frames that tested positive for lead. Building I3 had grey and white paint that tested positive for lead on wood door frames and beams, and the metal conveyor system.

#### Building J

Building J had grey and white paints on metal support beams that tested positive for lead.

#### Building L – Group

Building L1 had yellow, green and white paints with positive readings for lead on plaster, ceilings, doors, and door frames. Building L2 had white paint with positive LBP readings on concrete window sills and wood ceiling joists. The red painted brick and the wood door frame tested negative for LBP.

#### Building M

Building M had white and grey painted wood tested positive for LBP. The white wood painted cabinets and ceiling joists tested negative for lead. The concrete pillars white and blue tested

positive for lead. The yellow wall tested negative, the grey floor (concrete) had a positive reading. The red brick tested negative, but the white cinder block tested positive for LBP.

#### Building N

Building N had blue painted concrete window sills that tested positive for lead. The red, black, and white paints in Building N tested negative for lead.

#### Building O

Building O had white on brick walls and wood ceiling joints that tested positive for lead. Building O had doors, support beams, and red brick walls that tested negative for LBP.

#### Building P- Group

Building P1 had white and grey paints on door frames and walls that tested positive for LBP. Brick and metal walls tested negative for lead.

The building components reported as positive for LBP, substrates, color, locations, and readings are listed in the Lead Sample Log sheets, along with all the components tested in Appendix D. A summary of these results identified some common characteristics:

- Grey paint across the buildings (A, B, C, D, I, J, M, and P) had positive lead content.
- White paint across the building tested more than 50% positive for lead (suspect paint that should be checked).
- Peeling white paint in Building D1 production area is presumed to be LBP based on positive lead readings for the paint in the production room.
- Red paint in buildings B, D1, and F1 tested positive for lead. Other paint colors had mixed positive and negative lead results.
- Concrete and cinder block (Building C) had positive lead readings.
- Not all painted surfaces tested positive for lead.

A paint chip sample for every 10 HSAs was collected as a measure of quality control. The paint chip samples were analyzed by USEPA Central Regional Laboratory for lead by ICP. The paint chip results ranged from 14 mg/kg to 160,000 mg/kg. The paint chip results are report with the XRF data sheets and generally confirm the XRF lead results. The data results are presented with the CRL Table in Appendix E.

The survey focused on building materials that will be removed as part of demolition and will be recycled or handled on site. Sampling to determine hazardous characteristics is required to determine best practices for the recycling of the material or the disposal of the material: on-site or off-site. Peeling paints were found to be present extensively in Building D and the peeling paint is presumed to be LBP, flaking paints present a potential dust hazard during demolition of the buildings.

Painted concrete surfaces, interior and exterior, had lead content. Painted brick had high lead content. Painted concrete and brick may need abatement based on disposal option selection. Wood doors and frames generally tested positive for lead, except in Buildings F1, H, L2, N, and

O. Wood surfaces may need testing prior to disposal. A painted plaster surface in building L1 had high lead content. Metal with LBP can be recycled, however, the recycling facility should be informed of the LBP potential in case it impacts processing or recycling. The removal of the metal components may require on site demolition that could disturb lead paint. Lead dust should be managed and minimized during all demolition activities.

Workers who handle LBP coated building components must be protected from exposure following OSHA regulations. Measures for dust control should be in place prior to demolition activities.

The estimated quantities of LBP on building demolition components are not included herein. Further discussion and review of demolition and disposal options are required to provide useable estimated quantities that are pertinent to project progression. Additional field quantification should be provided for LBP based on remedial action decisions that will require LBP abatement, versus allow LBP to remain on components for disposal on-site and/or off-site.

## **4.0 Residual Sampling**

The buildings have residual product, waste and/or dust throughout the interior and exterior of the buildings. A sample of residual product or waste was collected from various building components. For example, production kilns and product storage areas were identified throughout Buildings C, D1, I, and J. The demolition of these buildings will disturb and impact the product or waste materials remaining in the building and adhering to production elements, walls, floors, and ceilings.

### **4.1 Residual Survey Methodology**

Each building was visually assessed for building components with visible product. The residual samples included samples of the white product in production buildings or on building components. Concrete walls and floors and brick walls were sampled for lead content due to residual product and dust. EDI understood that the building demolition was to the floor slab, and limited samples were collected from the concrete slabs, as they were to remain in place. Limited wipe samples were collected from brick, concrete, and wood as TCLP analysis was preferred for disposal determination. EDI focused on removal and disposal over sampling of materials that would remain in place.

The white product residual samples were collected directly into a glass sampling jar and labeled. The brick, cinder block, and concrete were chipped using a hammer and chisel, screw driver or similar devise and collected in a plastic bag. The wipe samples were collected from a 12 inch by 12 inch square, using a template. The wipe included a preservation compound and the wipe was contained in a sample vial for shipment to the laboratory. All residual samples (in 8 oz sample containers, plastic bags, and wipe sample vials) were submitted to CRL for laboratory analysis of lead content. Wipe samples were analyzed for total lead. Residuals (product, concrete, and brick) were analyzed for total and TCLP lead. EDI followed CLP Forms II Lite sample logging and tracking for the chain of custody and laboratory submittal. Attached in Appendix E are the residual sample logs and laboratory results.

### **4.2 Residual Results**

The residual sample (product, brick, concrete) results were reported by the CRL laboratory as total and TCLP metals. EDI tabulated the lead results (total and TCLP) for review and comparison to remedial objectives (Table 1). EDI tabulated the other metal results (copper, manganese, zinc, arsenic, and cadmium) for TCLP (Table 2) and total (Table 3) review and comparison. These results are provided in Appendix E with the Table from CRL.

The total lead results are compared to the TACO Tier 1 Construction Worker remedial objective for ingestion (700 mg/kg). Exceeding the construction worker objective will require the demolition contractor to develop health and safety procedures for work in these areas or with these materials. The TCLP lead results are compared to the Toxicity Characteristic as listed in 40 CFR 261.30 Table 1 for D008 Lead (5 mg/L). Lead results exceeding the Toxicity Characteristic limit are considered hazardous waste and will have to be removed and/or stabilized prior to off-site or on-site disposal. Residual product and brick in Buildings B, C, D1, and P1 had lead concentrations exceeding the

Toxicity Characteristic and the materials or residual on the building materials would be considered hazardous waste. The sample of brick from the interior north wall east end in Building B had a TCLP concentration of 5.05 mg/L. The residual brick and product sample from Building C west furnace had a TCLP concentration of 28.9 mg/L. A sample of the product from the center furnace in Building C had a TCLP of 1.3 mg/L. Samples of white product from Building D at the north end in the production area, had TCLP of 6 mg/L and 22.7 mg/L. Two of the three white product samples collected from this area were above the Toxicity Characteristic for lead. The composite brick sample from Building P1 had a TCLP result of 11.9 mg/L. The corresponding total lead results for these samples exceeded CW objectives and would require health and safety precautions.

The concrete floor in Building A had a total lead of 1,100 mg/kg, which exceeds the CW objective. This sample had a TCLP result of 1.06 mg/L, which is below the Toxicity Characteristic, but exceeds the Universal Treatment Standards.

The concrete floor in Building B and the cinder block wall in Building C both had total and TCLP lead results below CW objectives, below Toxicity characteristics and below Universal Treatment Standards.

Residual samples from the D1 and D2 Buildings included product, brick, and concrete samples that had lead results ranging from non-hazardous to hazardous concentrations. The product and brick on the north exterior wall had a TCLP lead result of 3.24 mg/L, which is below the hazardous level (but above the Universal Treatment Standard), however the total lead (1,800 mg/kg) did exceed the CW objective. These results were similar for the product sample collected at the north end of the production area. The brick from Building D2 north wall had a TCLP result of 2.38 mg/L, however, the duplicate sample from this area had a low TCLP of 0.0923 mg/L (both total lead results were low and similar at 51 mg/kg and 9.1 mg/kg). The concrete in Building D1 north hallway had low TCLP results (0.191 mg/L), but total lead (1500mg/kg) exceeding CW objectives.

Concrete in Building G had low level TCLP results (both less than 0.2 mg/L) and total lead results were 13 mg/kg and 830 mg/kg, indicating one exceedance above CW objectives. Residual samples from Building J (brick furnace and concrete) and Building K (exterior brick) were all well below toxicity characteristic and CW objectives. The brick and concrete samples from Buildings L1, M, and N were also below toxicity characteristics and CW objectives.

However, a correlation is expected between the total and TCLP data, which was not consistent in the laboratory data. For example, a TCLP result of 2.38 mg/L (sample R-D2-HA3-07) had a corresponding total lead result of 51 mg/kg, which seems low. In another location, a total lead result of 6200 mg/kg had a corresponding TCLP result of 0.0583 mg/L.

The wipe samples were collected from concrete and wood and the results were all above 1,050 ug/wipe with the highest reading at 26,200 ug/wipe. Regulations 40 CFR Part 745.65 identify a lead dust hazard for a residential or child-occupied facility as a lead concentration exceeding 40 ug/ft or per wipe on floors or 250 ug/wipe on interior window sills. The wipe samples collected from Eagle Zinc are all above these standards.

The other TCLP metal results did not identify arsenic in the samples tested. High levels of zinc were observed in the total and TCLP sample results. Cadmium TCLP results were reported at levels exceeding the Toxicity Characteristic of 1.0 mg/L in several samples. In Building C, the residual product from the center furnace, not identified to be hazardous for lead, is identified with cadmium concentrations above toxicity characteristics (cadmium at 2.59 mg/L). White product samples from Building D were identified at 3.47 mg/L cadmium and 12.8 mg/L cadmium, both exceeding Toxicity Characteristics. The Building D1 hallway concrete had TCLP cadmium results of 4.72 mg/L and 2.35 mg/L, which indicates hazardous levels of cadmium. A concrete sample from Building G had a concentration of 2.17 mg/L cadmium, exceeding the hazardous level.

The zinc sample results for TCLP in comparison to the generic exclusion levels for F006 non Wastewater HTMR residues indicate 22 samples at hazardous concentrations of the 34 residual samples collected and tested for TCLP metals. High concentrations of zinc (over 70 mg/L) were found in concrete, brick and residual samples in Buildings A, B, C, D, G, I, J, and K. These TCLP concentrations ranged from 77.8 mg/L to 4180 mg/L. The corresponding total zinc results ranged from 1,400 mg/kg to 380,000 mg/kg, with the highest total zinc result at 610,000 mg/kg in Building C at the center furnace. The CW remedial objective for zinc is 61,000 mg/kg, and 12 samples were reported exceeding this objective.

In summary, the residual product (and product adhered to building materials) should be considered a hazardous waste (based on TCLP lead and cadmium results). The residual product should be collected and disposed off-site or on-site as hazardous waste. The building materials, including brick and concrete, will be further sampled to identify if the hazardous characteristic is only on the surface of the material or if the metals have penetrated the material, to determine if the brick or concrete en mass should be considered hazardous or non-hazardous. Concrete and brick identified as non-hazardous can be disposed and buried on site. These materials would require some level of abatement or decommissioning to remove the hazardous dust or residuals on the surface. Materials should be tested for TCLP lead and cadmium at a minimum.

#### **4.3 Other Universal Wastes**

##### **Mercury and PCB containing equipment**

Thermostats were observed in the production and mechanical rooms that may be mercury containing. Thermostats controlling production heat and building heat could be mercury containing. Thermostats were observed at furnaces in Building C, four furnaces observed. Several electric panels were observed in Building D1. Barometers were observed in Building F2. Building heat thermostats would be expected in buildings L through P. No pole mounted transformers were observed on the site. Existing lighting ballasts are located throughout the buildings and accessible ballasts were viewed for labels. Labels on ballasts indicated non-PCB containing lighting. Lighting ballasts, not labeled, should be assumed to contain PCBs or tested prior to demolition to confirm non-PCBs containing. The demolition specifications should reference Illinois Standards for Universal Waste removal to management possible mercury and PCB containing equipment that may be on site during demolition activities. Universal wastes throughout the buildings should be handled in accordance with IAC Title 35 Part 733.

## 5.0 Findings and Recommendations

This Hazardous Materials Survey included the assessment of building materials for ACM, LBP, and residuals with high lead content. The survey included visual inspection of the accessible areas of the building and sampling for ACM, LBP, and residuals.

### Asbestos Containing Materials Survey

The following materials were determined to be ACM and are assumed ACM for all the buildings:

- Roofing materials
- Window paper covering, caulks and glazings, and door caulks.

These ACM building components were generally in poor condition and spread around the foot print of the building. Asbestos abatement design and planning must consider the impact of non-intact ACM. These materials would be considered Category I non-friable asbestos.

Other ACMs were building specific and included pipe insulation, floor tiles, mastics, and transite.

- Building C (north wall center) – pipe sealant
- Building H2 – air cell pipe insulation
- Building L1 – lab tops
- Building M (garage engineer office west) – air cell thermal system insulation
- Building M (break room) – transite ceiling
- Building N (office) – tan, brown, and gery floor tile and mastic
- Building N (office) – transite ceiling panels

These ACM building components were generally intact and in the interior of the building. The ACM is generally in poor condition. The ACMs are Category II friable and require abatement in containment prior to demolition.

ACM must be abated by an IDPH-licensed contractor using IDPH-licensed supervisors and workers, prior to building demolition. A site-specific asbestos abatement design is recommended and should be prepared under the direction of an IDPH-licensed asbestos project designer.

- Abate ACM noted pipe insulation, transite (ceiling and lab tops), and floor tile with mastic. However, Building N should be further assessed for mercury contamination on the building interior prior to abatement activities.
- All ACM's abated from Eagle Zinc shall be transported in a manor consistent with local and federal regulations.
- All ACM abated from Eagle Zinc shall be disposed of in an approved landfill or disposal facility in a manor consistent with local and federal regulations. A copy of the disposal documentation signed by a landfill or disposal facility representative shall be included in the final abatement report submitted to the Contracting Officer by the abatement contractor within 30 days of completing abatement.

## Lead-Based Paint Survey

The following building components were found to contain LBP:

- Concrete and brick surfaces (interior and exterior);
- Wood doors and frames, and other wood surfaces;
- Plaster surface in Building L1;
- Various metal building and production components.

Painted surfaces had positive and negative XRF results. Not all concrete, brick, wood, plaster or metal surfaces had LBP. In general, some common characteristics for positive LBP results included the following:

- Grey paint across the buildings (A, B, C, D, I, J, M, and P) had positive lead content.
- White paint across the building tested more than 50% positive for lead (suspect paint that should be checked).
- Peeling white paint in Building D1 production area is presumed to be LBP based on positive lead readings for the paint in the production room.
- Red paint in buildings B, D1, and F1 tested positive for lead. Other paint colors had mixed positive and negative lead results.
- Concrete and cinder block (Building C) had positive lead readings.

Workers who handle LBP coated building components must be protected from exposure following OSHA regulations. LBP building components may not require remedial or mitigation during demolition. Measures for dust control should be in place prior to demolition activities. However, recycling activities may require remedial action or mitigation, in order to recycle concrete or brick (for example).

## Residuals Survey

Residual product and brick in Buildings B, C, D1, and P1 had lead concentrations exceeding the Toxicity Characteristic and the materials or residual on the building materials would be considered hazardous waste. The sample of brick from the interior north wall east end in Building B had a TCLP concentration of 5.05 mg/L. The residual brick and product sample from Building C west furnace had a TCLP concentration of 28.9 mg/L. A sample of the product from the center furnace in Building C had a TCLP of 1.3 mg/L. Samples of white product from Building D at the north end in the production area, had TCLP of 6 mg/L and 22.7 mg/L. Two of the three white product samples collected from this area were above the Toxicity Characteristic for lead. The composite brick sample from Building P1 had a TCLP result of 11.9 mg/L. The corresponding total lead results for these samples exceeded CW objectives and would require health and safety precautions.

The other TCLP metal results did not identify arsenic in the samples tested. High levels of zinc were observed in the total and TCLP sample results. Cadmium TCLP results were reported at levels exceeding the Toxicity Characteristic of 1.0 mg/L in several samples. In Building C, the residual product from the center furnace, not identified to be hazardous for lead, is identified with cadmium concentrations above toxicity characteristics (cadmium at 2.59 mg/L). White product

samples from Building D were identified at 3.47 mg/L cadmium and 12.8 mg/L cadmium, both exceeding Toxicity Characteristics. The Building D1 hallway concrete had TCLP cadmium results of 4.72 mg/L and 2.35 mg/L, which indicates hazardous levels of cadmium. A concrete sample from Building G had a concentration of 2.17 mg/L cadmium, exceeding the hazardous level.

The zinc sample results for TCLP in comparison to the generic exclusion levels for F006 non Wastewater HTMR residues indicate 22 samples at hazardous concentrations of the 34 residual samples collected and tested for TCLP metals. High concentrations of zinc (over 70 mg/L) were found in concrete, brick and residual samples in Buildings A, B, C, D, G, I, J, and K. These TCLP concentrations ranged from 77.8 mg/L to 4180 mg/L. The corresponding total zinc results ranged from 1,400 mg/kg to 380,000 mg/kg, with the highest total zinc result at 610,000 mg/kg in Building C at the center furnace. The CW remedial objective for zinc is 61,000 mg/kg, and 12 samples were reported exceeding this objective.

In summary, the residual product (and product adhered to building materials) should be considered a hazardous waste (based on TCLP lead and cadmium results). The residual product should be collected and disposed off-site or on-site as hazardous waste. The building materials, including brick and concrete, will be further sampled to identify if the hazardous characteristic is only on the surface of the material or if the metals have penetrated the material, to determine if the brick or concrete en mass should be considered hazardous or non-hazardous. Concrete and brick identified as non-hazardous can be disposed and buried on site. These materials would require some level of abatement or decommissioning to remove the hazardous dust or residuals on the surface. Materials should be tested for TCLP lead and cadmium at a minimum.

Existing thermostats should be checked or removed prior to demolition activities. Existing thermostats or thermometers were observed in the production building and may contain mercury. Existing lighting ballasts are assumed to be located throughout the buildings and will require removal and proper disposal. Lighting ballasts should be assumed to contain PCBs, if not labeled as non-PCBs, or tested prior to demolition to confirm non-PCBs containing. Universal wastes throughout the buildings should be handled in accordance with IAC Title 35 Part 733.

## **6.0 Limitations**

This report is based solely on the scope of work provided and the assumptions identified in this limited survey. Any new information that becomes available concerning the subject site should be provided to EDI so that our evaluations, conclusions, and recommendations may be revised and modified accordingly. All materials tested are assumed homogeneous throughout the proposed renovation areas. EDI staff walked the site area with building representatives to identify accessible areas to be included in the limited survey. Every attempt was made to thoroughly evaluate and assess the presence and condition of suspect asbestos and lead containing materials. Not all rooms were accessible during the survey. EDI did not perform destructive sampling practices and suspect materials may exist within occupied or inaccessible areas. Any suspect material identified during renovation that is not specifically listed herein should be thoroughly assessed, sampled and analyzed prior to disturbance, in accordance with applicable regulatory standards.

The findings and conclusions in this report are not specific certainties; rather they are probabilities based on professional judgment concerning the significance of the data collected. EDI claims to represent only the specific findings documented herein and does not claim knowledge of conditions beyond the scope of the limited survey.

The asbestos and lead survey was conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the environmental profession under similar conditions. No other warranty or guarantee, express or implied, is included or intended in this Report or otherwise.

This report is intended for the use of the client, subject to the terms and conditions of EDI's Scope of Services and Fees for Professional Services Agreement.

## **7.0 Acronyms and Definitions**

<b>ACM:</b>	Asbestos Containing Materials
<b>ANSI:</b>	American National Standards Institute
<b>DOT:</b>	U.S. Department of Transportation
<b>EPA:</b>	Environmental Protection Agency
<b>ELLAP:</b>	Environmental Lead Laboratory Accreditation Program
<b>HUD:</b>	U.S. Housing and Urban Development
<b>IDOT:</b>	Illinois Department of Transportation
<b>LBP:</b>	Lead-Based Paint
<b>NESHAP:</b>	National Emissions Standard for Hazardous Air Pollution
<b>NVLAP:</b>	National Voluntary Laboratory Accreditation Program
<b>OSHA:</b>	Occupational Safety and Health Administration
<b>PLM:</b>	Polarized Light Microscopy
<b>RACM:</b>	Regulated Asbestos Containing Material
<b>TEM:</b>	Transmission Electron Microscopy
<b>TSI:</b>	Thermal System Insulation
<b>XRF:</b>	X-Ray Fluorescence

The following definitions are intended to provide the reader with a better understanding of the terminology used in this report.

### **Asbestos**

The general name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos includes the asbestiform varieties of chrysotile (serpentine); corcidolite (riebeckite); amosite (cummingtonite-frunertie); anthophyllite; and actinolite.

### **Asbestos-Containing Material**

Asbestos containing materials (ACM) are materials that are found to contain greater than one percent by weight asbestos content as determined by polarized light microscopy (PLM) analysis.

### **Accessible Areas**

An accessible area of the building is any area that the survey team is permitted to inspect and that can be inspected without the disassembly of complicated mechanical or rigid structural components of the building. Examples of accessible areas of the building are interior floors, walls, ceilings, areas above suspended ceilings, return air shafts (normally), mechanical piping exteriors, and equipment exteriors, etc.

### **Damaged material**

A “damaged” material contains a few water stains or less than one-tenth of insulation with missing jackets and/or crushed insulation or water stains, gouges, punctures, or mars on surface up to one-tenth of the insulation if the damage is evenly distributed or up to one-quarter if the damage is localized.

### **Inaccessible Areas**

An inaccessible area is any area where inspection access is not permitted or requires a considerable amount of mechanical or structural disassembly to inspect. Inaccessible areas normally only investigated prior to renovation or demolition activities. Examples of inaccessible areas are pipe chases behind walls, mechanically encased insulation, crawlspaces or unsafe areas.

### **Friable Material**

A material, that when dry, may be crumbled, pulverized or reduced to powder by hand pressure is a friable material. Examples of friable materials include: pipe insulation, boiler or tank insulation, or sprayed-on fireproofing.

### **Non-friable Material**

A material, that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure. Non-friable materials may become friable through damage or deterioration. Examples of non-friable materials include: intact floor tile, transite building panels, or well maintained roofing materials.

### **Homogeneous Area**

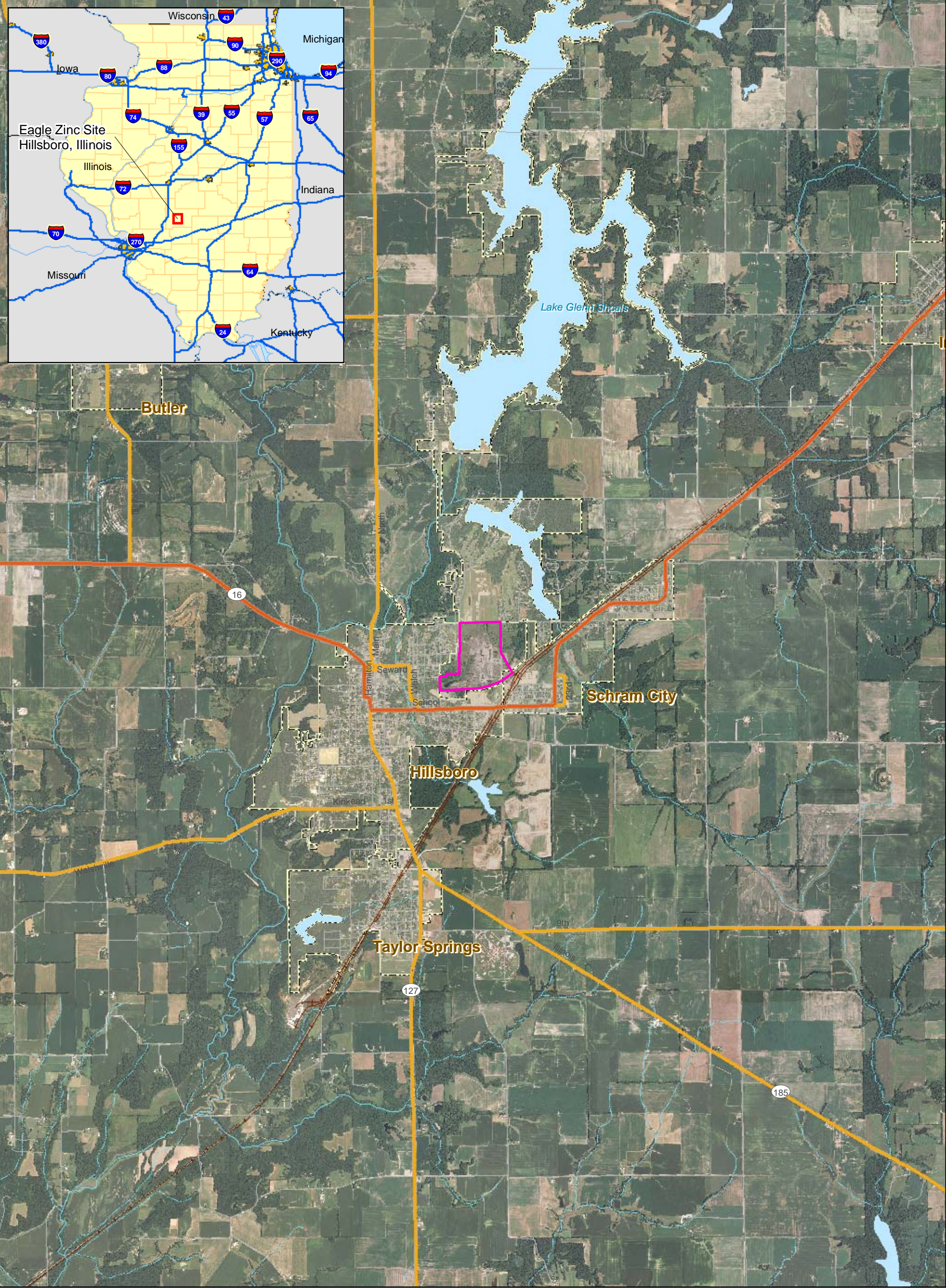
A homogeneous area is defined as a group of materials that is uniform in texture and appearance, was installed at one time, and is likely to consist of more than one type or formation of material.

### **Significantly Damaged Material**

A “significantly damaged” material contains missing jackets on at least one-tenth of the piping or equipment and/or is crushed, heavily gouged, or punctured insulation on at least one-tenth of pipe runs/rises, boilers, tanks, ducts, etc., if the damage is evenly distributed or one-quarter of the damage is localized.

## Figures





**Legend**  
Site Boundary

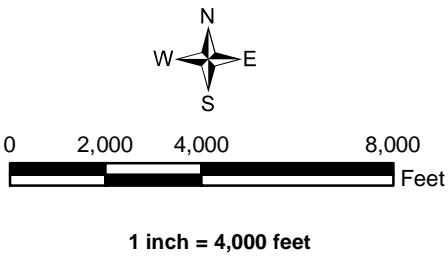


Figure 1  
Site Location Map  
OU2 UFP-QAPP  
Eagle Zinc Superfund Site - Hillsboro, Illinois

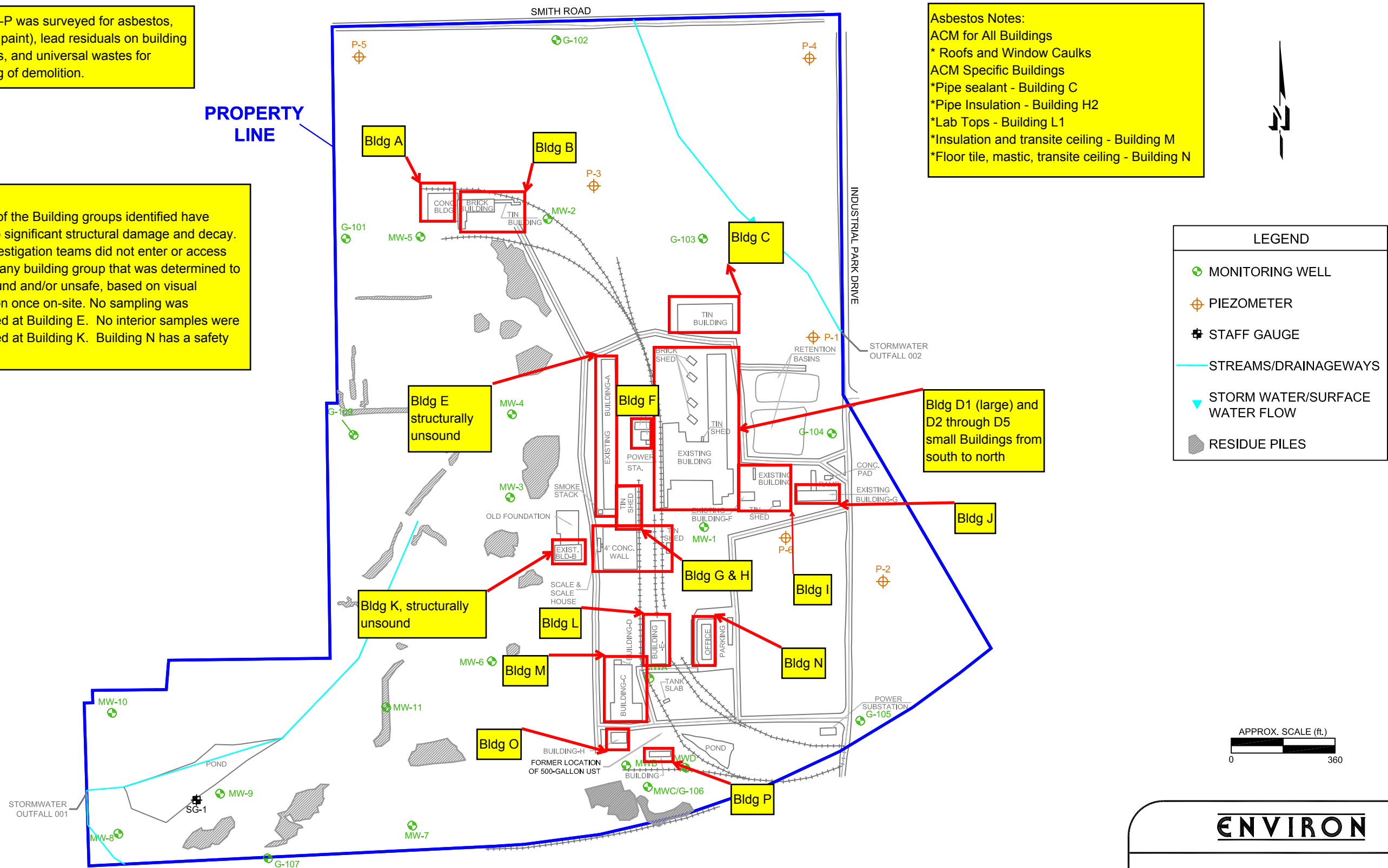


Figure 2: Site Layout for Field Investigation  
(Base drawing provided by CH2M Hill)

Bldgs A-P was surveyed for asbestos, lead (in paint), lead residuals on building surfaces, and universal wastes for planning of demolition.

**NOTE:**  
Several of the Building groups identified have limited to significant structural damage and decay. Field investigation teams did not enter or access areas of any building group that was determined to be unsound and/or unsafe, based on visual evaluation once on-site. No sampling was conducted at Building E. No interior samples were conducted at Building K. Building N has a safety concern.

**Asbestos Notes:**  
ACM for All Buildings  
\* Roofs and Window Caulks  
ACM Specific Buildings  
\* Pipe sealant - Building C  
\* Pipe Insulation - Building H2  
\* Lab Tops - Building L1  
\* Insulation and transite ceiling - Building M  
\* Floor tile, mastic, transite ceiling - Building N



**ENVIRON**

SITE LAYOUT MAP  
EAGLE ZINC  
HILLSBORO, ILLINOIS

DATE: 11/02/04	CONTRACT NUMBER: 21-7400E	FIGURE I-2
DRAFTER: APR	APPROVED:	REVISED:



## **Appendices**



## **Appendix A: ACM and LBP Inspector Licenses and Certifications**





**ASBESTOS  
PROFESSIONAL  
LICENSE**

ID NUMBER  
**100 - 10088**

ISSUED  
**4/26/2010**

EXPIRES  
**05/15/2011**

JOSE G AGUILERA  
2652 S. CENTRAL PARK AVEN  
CHICAGO, IL 60623

Environmental Health



**ENDORSEMENTS**

**TC EXPIRES**

INSPECTOR

2/5/2011

PROJECT MANAGER  
AIR SAMPLING PROFESSIONAL

7/31/2010

**Alteration of this license shall result in legal action**  
This license issued under authority of the State of Illinois  
Department of Public Health  
This license is valid only when accompanied by a valid  
training course certificate.



# Occupational Training & Supply, Inc.

7233 Adams Street ♦ Willowbrook, IL 60527 ♦ (630) 655-3900

## Jose Aguilera

has successfully completed the 4 hour Asbestos Building Inspector Refresher course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health and the Indiana Department of Environmental Management for purposes of accreditation in accordance with EPA 40 CFR 763, Asbestos Hazard Emergency Response Act (AHERA) and TSCA Title II.

## Asbestos Building Inspector Refresher

Course Date: 2/5/2010

Expiration Date: 2/5/2011

Exam Date: 2/5/2010

Certificate: BIR1002050274

Kathy DeSalvo, Director

2010



# Occupational Training & Supply, Inc.

7233 Adams Street ♦ Willowbrook, IL 60527 ♦ (630) 655-3900

*Jose G. Aguilera*

has successfully completed the 16 hour Lead Risk Assessor course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health in accordance with the Illinois Lead Poisoning Prevention Code.

*Lead Risk Assessor*

Course Date: 4/2-3/2009

Expiration Date: 4/3/2012

Exam Date: 4/3/2009

Certificate: LRA0904021069

*Kathy DeSalvo*  
\_\_\_\_\_  
Kathy DeSalvo Director

2009



**LEAD RISK  
ASSESSOR LICENSE**

LEAD ID	ISSUED	EXPIRES
006379	1/27/2010	1/31/2011

Paul S Kybartas  
7663 Walnut Ave.  
Woodridge, IL 60517



ILLINOIS LEAD PROGRAM  
Environmental Health

Alteration of this license shall result in legal action  
RISK ASSESSOR CERTIFICATE EXPIRES  
2/1/2011

This license issued under authority of the State  
of Illinois -Department of Public Health

This license is valid only when accompanied by  
a valid training course certificate

If found return to 525 W. Jefferson St Springfield, IL 62761



# Occupational Training & Supply, Inc.

7233 Adams Street • Willowbrook, IL 60527 • (630) 655-3900

*Paul Kybartas*

*has successfully completed the 8 hour Lead Risk Assessor Refresher course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health in accordance with the Illinois Lead Poisoning Prevention Code.*

## *Lead Risk Assessor Refresher*

Course Date: February 1, 2008

Expiration Date: February 1, 2011

*Kathy DeSalvo*

Kathy DeSalvo, Director

Exam Date: February 1, 2008

Certificate: LRAR0802010365

2008

# Certificate of Achievement

This is to certify that

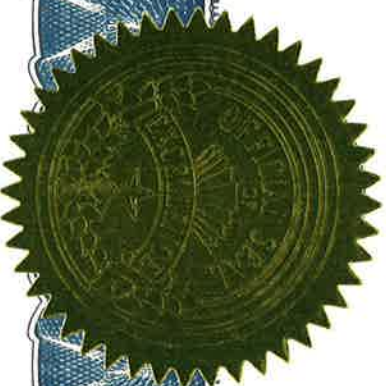
**Paul S. Kybartas**  
**Aires Consulting Group**

on the 31<sup>st</sup> day of July 2008 successfully completed the factory training for  
**RMD's LPA-1 Lead Paint Inspection System**

including, but not limited to the topics of Radiation Safety, DOT Regulations, and the Proper Use of the Instrument.



Jacob Paster, Vice President, RMD  
44 Hunt St., Watertown, Massachusetts





**ASBESTOS  
PROFESSIONAL  
LICENSE**

ID NUMBER  
**100 - 08451**

ISSUED  
**5/4/2010**

EXPIRES  
**05/15/2011**

PAUL S KYBARTAS  
7663 WALNUT AVENUE  
WOODRIDGE, IL 60517  
Environmental Health



**ENDORSEMENTS**

**TC EXPIRES**

INSPECTOR

3/24/2011

PROJECT MANAGER  
AIR SAMPLING PROFESSIONAL

1/23/2011

**Alteration of this license shall result in legal action**  
This license issued under authority of the State of Illinois  
Department of Public Health  
This license is valid only when accompanied by a valid  
training course certificate.



# Occupational Training & Supply, Inc.

7233 Adams Street • Willowbrook, IL 60527 • (630) 655-3900

## Paul Kybartas

*has successfully completed the 4 hour Asbestos Building Inspector Refresher course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health and the Indiana Department of Environmental Management for purposes of accreditation in accordance with EPA 40 CFR 763, Asbestos Hazard Emergency Response Act (AHERA) and TSCA Title II.*

## Asbestos Building Inspector Refresher

Course Date: 3/24/2010

Expiration Date: 3/24/2011

Exam Date: 3/24/2010

Certificate: BIR1003240903

Kathy DeSalvo, Director

2010



# Occupational Training & Supply, Inc.

7233 Adams Street • Willowbrook, IL 60527 • (630) 655-3900

## Kristen Templin

has successfully completed the 24 hour Asbestos Building Inspector course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health and Indiana Department Environmental Management for purposes of accreditation in accordance with EPA 40 CFR 763, Asbestos Hazard Emergency Response Act (AHERA) and TSCA Title II.

## Asbestos Building Inspector

Course Date: 3/3-5/2010  
Expiration Date: 3/5/2011

Exam Date: 3/5/2010  
Certificate: AB11003050627

  
Kathy DeSalvo, Director

2010



**ASBESTOS  
PROFESSIONAL  
LICENSE**

ID NUMBER

**100 - 18364**

ISSUED

**2/19/2010**

EXPIRES

**05/15/2011**

**KRISTEN R TEMPLIN**  
3933 N CLARENDON APT 505  
CHICAGO, IL 60613

Environmental Health



**ENDORSEMENTS**

**TC EXPIRES**

PROJECT MANAGER

8/21/2010

**Alteration of this license shall result in legal action**  
This license issued under authority of the State of Illinois  
Department of Public Health  
This license is valid only when accompanied by a valid  
training course certificate.

## **Appendix B: Photograph Log**



## Photographic Log

Project Name	Eagle Zinc OU1
--------------	----------------

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building B looking west. Window coverings and roof materials were positive for asbestos. Painted surfaces were positive for lead.</p>	
Photo #1	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building C looking east. Center furnace (in photo) had hazardous levels of cadmium in residual samples. West furnace had hazardous levels of lead in residual.</p>	
Photo #2	

## Photographic Log

Project Name	Eagle Zinc OU1
--------------	----------------

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of kilns in Building C looking north.</p> <p>Photo #3</p>	
---	---

<p>Proj: 1471.001.02 Date: 8/23/10 Photographed By: Scott Dileto</p> <p>Description: View of a suspect mercury containing thermostat in Building C.</p> <p>Photo #4</p>	
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## Photographic Log

Project Name	Eagle Zinc OU1
--------------	----------------

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph showing an exterior view of several brick buildings (D2-D5) under a clear blue sky. A large, dark, angled structure, possibly a conveyor or roof section, is visible in the foreground, supported by wooden scaffolding. The ground is dirt and gravel.
<p>Description: Exterior view of Buildings D2-D5 looking south.</p> <p>Photo #5</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph showing the interior of a building, likely Building D1. The view is of a large, rusted metal hopper structure supported by wooden posts. The walls and ceiling are heavily corroded and peeling. A white door is visible on the right side.
<p>Description: View of a hopper located in Building D1.</p> <p>Photo #6</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
--------------	----------------

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of an AST located on the southwest corner of the brick section of Building D1.</p>	
Photo #7	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of an AST in a tin shed located adjacent to the southwest corner of the brick section of Building D1.</p>	
Photo #8	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1471.001.02 Date: 8/23/10 Photographed By: Scott Dileto</p>	
<p>Description: View of the interior of the south end of Building D1, under the tin roof looking west.</p>	
Photo #9	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the interior of the south end of Building D1, under the tin roof looking east.</p>	
Photo #10	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of ceiling on the top level in Building D1.</p> <p>Photo #11</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the conveyor belt in the central room of the south section of Building D1.</p> <p>Photo #12</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of electric panels in Building D1.</p> <p>Photo #13</p>	
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of electric panels in Building D1.</p> <p>Photo #14</p>	
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## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the kiln in Building J.</p> <p>Photo #15</p>	

<p>Proj: 1471.001.02 Date: 8/23/10 Photographed By: Scott Dileto</p>	
<p>Description: View of the kiln and product in Building J.</p> <p>Photo #16</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the standing water in Building F2.</p> <p>Photo #17</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the barometers in Building F2, suspect mercury containing.</p> <p>Photo #18</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of barrels marked as "empty" stored in Building G.</p> <p>Photo #19</p>	 A photograph showing the interior of a large, industrial building. The floor is concrete. In the background, a row of approximately ten large, cylindrical metal barrels is lined up against a wall. The barrels are dark in color, some with lighter bands. The wall behind them is made of corrugated metal and shows signs of rust and wear. The ceiling is high with exposed wooden beams and a corrugated metal roof. Light enters from the right side of the frame.
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of the interior of Building G looking northeast.</p> <p>Photo #20</p>	 A photograph showing a different part of the interior of Building G. The view is looking towards the northeast. A large, low concrete wall runs across the middle of the frame. The floor is concrete. The ceiling is high with exposed wooden beams and a corrugated metal roof. The walls are made of corrugated metal. Light enters from the right side of the frame.
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## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of the interior of Building G looking northwest.</p> <p>Photo #21</p>	 A photograph showing the interior of a large, dilapidated industrial building. The ceiling is made of exposed wooden beams and is partially collapsed. The floor is concrete and covered with debris. In the background, there is a large opening in the wall, possibly a loading dock, which is brightly lit. The overall atmosphere is dark and gritty.
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of the interior of Building K looking west.</p> <p>Photo #22</p>	 A photograph showing the interior of a large, dilapidated industrial building. The walls are made of brick and are heavily damaged. There are several large windows, some of which are boarded up or missing. The floor is concrete and covered with debris. In the background, there is a large opening in the wall, possibly a loading dock, which is brightly lit. The overall atmosphere is dark and gritty.
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## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of coating on piping in Building H2.</p> <p>Photo #23</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of coating on piping in Building H2.</p> <p>Photo #24</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of exterior of Building H2 looking northwest and a drum.</p> <p>Photo #25</p>	 A photograph showing the exterior of a small, weathered building with corrugated metal siding. A white door with a glass pane is slightly ajar. To the right of the door, a large, rusted metal drum lies on the ground. The building is surrounded by tall grass and weeds. In the background, industrial structures and a clear blue sky are visible.
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p> <p>Description: View of the exterior of Building M looking northeast.</p> <p>Photo #26</p>	 A photograph showing the exterior of a large, multi-story red brick building. In the foreground, there is a small, weathered shed with corrugated metal siding and a gabled roof. The ground is gravelly with some sparse vegetation. The sky is clear and blue.
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## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the roof from the interior of the garage section of Building M looking east.</p>	
Photo #27	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the roof from the interior of the garage section of Building M looking southeast.</p>	
Photo #28	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior ceiling panels in Building M, suspect asbestos containing.</p>	
Photo #29	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the exterior of Building O looking south.</p>	
Photo #30	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the interior of the cafeteria section in Building M facing east.</p> <p>Photo #31</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the exterior of Building P1 looking southeast.</p> <p>Photo #32</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph showing the interior of a room in Building P1. The ceiling is made of horizontal wooden planks. Two long, cylindrical fluorescent light fixtures hang from the ceiling by wires. The walls are white and show signs of peeling paint and discoloration. A window is visible on the left wall, and a door is partially visible in the center. The floor is dark and appears to be made of wood or concrete.
<p>Description: View of the interior of Building P1 looking southwest.</p> <p>Photo #33</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph showing the interior of the roof of Building P1. The roof structure is made of a complex network of wooden beams and trusses. The beams are made of weathered wood and are arranged in a grid-like pattern. The trusses are also made of wood and are connected by metal brackets. The roof is supported by several windows on the walls, which are visible in the background. The overall appearance is that of an old, well-maintained structure.
<p>Description: View of the interior roof of Building P1.</p> <p>Photo #34</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the interior of Building P1 looking east.</p> <p>Photo #35</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the interior ceiling of Building L1.</p> <p>Photo #36</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph showing the interior of a building. On the left, there are several wooden shelves mounted on a wall. The wall appears to be made of concrete or masonry, with some peeling paint or plaster. To the right, there is a window with a wooden frame. Outside the window, a red building and some greenery are visible. The floor is made of wooden planks.
<p>Description: View of the interior of Building L1.</p> <p>Photo #37</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A close-up photograph of a metal walkway or ceiling structure. The surface is heavily corroded and covered in brown, flaking paint. A white pipe or cable is visible running across the structure. The metal beams supporting the structure are also visible.
<p>Description: View of the flaking paint off of the 2nd story walkway in Building D1, paint chip sample location.</p> <p>Photo #38</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the exterior of Building D1 product and brick looking south.</p> <p>Photo #39</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of roofing materials from Building D1 looking southwest.</p> <p>Photo #40</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of roofing materials from Building D1 looking southwest.</p> <p>Photo #41</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of product in a hopper in Building D1.</p> <p>Photo #42</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of a concrete sample location from Building D1.</p> <p>Photo #43</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of residual sample location located in Building D1.</p> <p>Photo #44</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building N, taken from the exterior.</p> <p>Photo #45</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building N, taken from the exterior.</p> <p>Photo #46</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building N, taken from the exterior.</p>	
Photo #47	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of interior of Building N, taken from the exterior.</p>	
Photo #48	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph of the interior of a building. The wall is covered in graffiti, including the word "Brand" in yellow. The floor is concrete and cluttered with debris, including a large black circular object, a cardboard box, and a metal tray. A doorway in the background leads to another area with lockers.
<p>Description: View of interior of Building N, taken from the exterior.</p> <p>Photo #49</p>	

<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	 A photograph of the exterior of a red brick building. The building has a white door and a small arched window. A large orange circle is painted on the brick wall. The building is surrounded by trees and a grassy area.
<p>Description: View of the exterior of Building O looking southwest.</p> <p>Photo #50</p>	

## Photographic Log

Project Name	Eagle Zinc OU1
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<p>Proj: 1515.017.03 Date: 8/23/10 Photographed By: K. Templin</p>	
<p>Description: View of the exterior door on Building O, asbestos sample location.</p> <p>Photo #51</p>	

**Appendix C: ACM Laboratory Results with Chain of Custody Forms and Laboratory Accreditation**





EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building B							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-B-HA1	-1	Mortar	Main building N. wall			X	
A-B-HA1	-2	Mortar	Main building E. wall			X	
A-B-HA1	-3	Mortar	Main building S. wall			X	
A-B-HA2	-4	Brick	Main building S. wall			X	
A-B-HA2	-5	Brick	Main building N. wall			X	
A-B-HA2	-6	Brick	Main building E. wall			X	
A-B-HA3	-7	Concrete patching	Tin building extending east, S. wall			X	
A-B-HA3	-8	Concrete patching	Tin building extending east, lower S. wall			X	
A-B-HA3	-9	Concrete patching	Tin building extending east, lower N. wall			X	
A-B-HA4	-10	Cinder block mortar	Inside main building, E. wall			X	
A-B-HA4	-11	Cinder block mortar	Inside main building, S. wall			X	
A-B-HA4	-12	Cinder block mortar	Inside main building, S. wall west			X	
A-B-HA5	-13	Window asphalt paper	Main building north wall west end window			X	
A-B-HA5	-14	Window asphalt paper	Main building east wall south end window			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building B							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-B-HA5	-15	Window asphalt paper	Main building south wall	Chrysotile	8.7		
A-B-HA6	-16	Corrugated metal	Tin building east wall exterior			X	1 & 2
A-B-HA6	-17	Corrugated metal	Tin building north wall east			X	1
A-B-HA6	-17	Black Mastic on Corrugated metal	Tin building north wall east	Chrysotile	0.75		2
A-B-HA6	-18	Corrugated metal	Tin building north wall west			X	1
A-B-HA6	-18	Corrugated metal	Tin building north wall west	Chrysotile	1.2		2

Note: All results greater than 1% are considered asbestos containing.

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



**EAGLE ZINC OU1  
HILLSBORO, ILLINOIS**

10/20/2010

<b>ASBESTOS SAMPLE LOG – Building C</b>							
<b>HSA</b>	<b>Sample Number</b>	<b>Material Description</b>	<b>Sample Location</b>	<b>Type</b>	<b>% Asbestos</b>	<b>No Asbestos Detected</b>	<b>Sample Layers tested if more than 1</b>
A-C-HA7	-19	window glazing	west wall at entrance			X	
<b>A-C-HA7</b>	<b>-20</b>	<b>window glazing</b>	<b>south wall at entrance</b>	<b>Chrysotile</b>	<b>2.8</b>		
A-C-HA7	-21	window glazing	north wall		NA		
<b>A-C-HA8</b>	<b>-22</b>	<b>window caulk</b>	<b>north wall</b>	<b>Chrysotile</b>	<b>4.2</b>		
A-C-HA8	-23	window caulk	north wall		NA		
A-C-HA8	-24	window caulk	north wall		NA		
A-C-HA9	-25	vibration dampener	on green dust collector			X	
A-C-HA9	-26	vibration dampener	on green dust collector			X	
A-C-HA9	-27	vibration dampener	on green dust collector			X	
A-C-HA10	-28	brick	east furnace			X	
A-C-HA10	-29	brick	west furnace			X	
A-C-HA10	-30	brick	west furnace duplicate			X	
A-C-HA10	-31	brick	center furnace			X	
A-C-HA11	-32	mortar	east furnace			X	
A-C-HA11	-33	mortar	west furnace			X	
A-C-HA11	-34	mortar	center furnace			X	2
A-C-HA12	-35	plaster	north furnace			X	
A-C-HA12	-36	plaster	north furnace			X	
A-C-HA12	-37	plaster	north furnace			X	
A-C-HA13	-38	mortar	north furnace			X	
A-C-HA13	-39	mortar	north furnace			X	
A-C-HA13	-40	mortar	north furnace			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building C							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-C-HA14	-41	brick	north furnace			X	
A-C-HA14	-42	brick	north furnace			X	
A-C-HA14	-43	brick	north furnace			X	
A-C-HA15	-44	insulation-green	east furnace			X	
A-C-HA15	-45	insulation-green	west furnace			X	
A-C-HA15	-46	insulation-green	west furnace			X	
A-C-HA16	-47	pipe sealant	north wall central building	Chrysotile	2.6		

**Note:** All results greater than 1% are considered asbestos containing.

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building D1							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-D1-HA22	-64	roof tar	D1 bottom			X	
<b>A-D1-HA22</b>	<b>-65</b>	<b>roof tar</b>	<b>D1 bottom</b>	<b>Chrysotile</b>	<b>1.5</b>		
A-D1-HA22	-66	roof tar	D1 bottom		NA		
<b>A-D1-HA22</b>	<b>-67</b>	<b>roof tar</b>	<b>D1 top</b>	<b>Chrysotile</b>	<b>2.2</b>		
A-D1-HA22	-68	roof tar	D1 top		NA		
A-D1-HA22	-69	roof tar	D1 top		NA		
A-D1-HA23	-70	filtering sock	north end			X	
A-D1-HA23	-71	filtering sock	north end			X	
A-D1-HA23	-72	filtering sock	north end			X	
A-D1-HA24	-73	plaster	concrete wall, west interior north			X	
A-D1-HA24	-74	plaster	concrete wall, west interior central			X	
A-D1-HA24	-75	plaster	concrete wall, west interior south			X	
<b>A-D1-HA25</b>	<b>-76</b>	<b>window glazing</b>	<b>exterior window, west wall</b>	<b>Chrysotile</b>	<b>3.6</b>		
A-D1-HA25	-77	window glazing	exterior window, west wall		NA		
A-D1-HA25	-78	window glazing	exterior window, west wall		NA		
A-D1-HA26	-79	ceiling tile	north lab			X	
A-D1-HA26	-80	ceiling tile	restroom			X	
A-D1-HA26	-81	ceiling tile	sink area			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building D1							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-D1-HA27	-82	roof	walkway	Chrysotile	2.1		
A-D1-HA27	-83	roof	walkway		NA		
A-D1-HA27	-84	roof	walkway		NA		
A-D1-HA28	-85	TSI	south end west			X	
A-D1-HA28	-86	TSI	south end east			X	
A-D1-HA28	-87	TSI	south end central			X	

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



**EAGLE ZINC OU1  
HILLSBORO, ILLINOIS**

10/20/2010

<b>ASBESTOS SAMPLE LOG – Building D2, D3, &amp; D4</b>							
<b>HSA</b>	<b>Sample Number</b>	<b>Material Description</b>	<b>Sample Location</b>	<b>Type</b>	<b>% Asbestos</b>	<b>No Asbestos detected</b>	<b>Sample Layers tested if more than 1</b>
A-D2-HA17	-48	roof sealant	D2	Chrysotile	25		
A-D2-HA17	-49	roof sealant	D3		NA		
A-D2-HA17	-50	roof sealant	D4		NA		
A-D2-HA18	-51	brown mortar	roof D2			X	
A-D2-HA18	-52	brown mortar	D3	Chrysotile	1.3		
A-D2-HA18	-53	brown mortar	D4			X	
A-D2-HA19	-54	grey mortar	brick to roof D2			X	
A-D2-HA19	-55	grey mortar	brick to roof D3			X	
A-D2-HA19	-56	grey mortar	brick to roof D3			X	
A-D2-HA20	-57	mortar	brick to brick D2			X	
A-D2-HA20	-58	mortar duplicate	brick to brick D2			X	
A-D2-HA20	-59	mortar	brick to brick D3			X	
A-D2-HA20	-60	mortar	brick to brick D4			X	
A-D2-HA21	-61	brick	D2			X	
A-D2-HA21	-62	brick	D3			X	
A-D2-HA21	-63	brick	D4			X	

Results in yellow were revised during lab QC process.

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building H							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-H-HA30	-92	ceiling tile	H			X	
A-H-HA30	-93	ceiling tile	H			X	
A-H-HA30	-94	ceiling tile	H			X	
A-H-HA30	-95	mortar	brick/cinder block south			X	
A-H-HA30	-96	mortar	brick/cinder block north			X	
A-H-HA30	-97	mortar	brick/cinder block west			X	

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



ASBESTOS SAMPLE LOG – Buildings H2 & H3							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No asbestos detected	Sample Layers tested if more than 1
A-H2-HA35	-108	tank insulation	H2			X	
A-H2-HA35	-109	tank insulation	H2			X	
A-H2-HA35	-110	tank insulation	H2			X	
A-H2-HA36	-111	fittings	H2 pipe			X	
A-H2-HA36	-112	fittings	H2 pipe			X	
A-H2-HA36	-113	fittings	H2 pipe			X	
A-H2-HA37	-114	air cell	H2 pipe	Chrysotile	85		
A-H2-HA37	-115	air cell	H2 pipe		NA		
A-H2-HA37	-116	air cell	H2 pipe		NA		
A-H2-HA38	-117	pipe insulation	H2			X	
A-H2-HA38	-118	pipe insulation	H2			X	
A-H2-HA38	-119	pipe insulation	H2			X	
A-H2-HA39	-120	window glazing	H3	Chrysotile	0.5		
A-H2-HA39	-121	window glazing	H3	Chrysotile	trace		
A-H2-HA39	-122	window glazing	H3	Chrysotile	0.25		
AD-H2-HA39	-123	window glazing duplicate	H3	Chrysotile	0.75		

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building J							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-J-HA29	-88	insulation	furnace at metal doors			X	
A-J-HA29	-89	insulation	furnace at metal doors			X	
A-J-HA29	-90	insulation	furnace at metal doors			X	
A-J-HA29	-91	insulation duplicate	furnace at metal doors			X	

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

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EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building K							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-K-HA32	-98	roofing	southside	Chrysotile	1.2		
A-K-HA32	-99	roofing	southside		NA		
A-K-HA32	-100	roofing	southside	Chrysotile	4.1		
A-K-HA32	-101	roofing duplicate	southside	Chrysotile	6.7		
A-K-HA33	-102	brick	southside			X	
A-K-HA33	-103	brick	southside			X	
A-K-HA33	-104	brick	southside			X	
A-K-HA34	-105	mortar	southside			X	
A-K-HA34	-106	mortar	southside			X	
A-K-HA34	-107	mortar	southside			X	

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



**EAGLE ZINC OU1  
HILLSBORO, ILLINOIS**

10/20/2010

<b>ASBESTOS SAMPLE LOG – Building L1</b>							
<b>HSA</b>	<b>Sample Number</b>	<b>Material Description</b>	<b>Sample Location</b>	<b>Asbestos Type</b>	<b>% Asbestos</b>	<b>No Asbestos Detected</b>	<b>Sample Layers tested if more than 1</b>
A-L1-HA40	-124	window caulk/ black tar	exterior	Chrysotile	5.3		1
A-L1-HA40	-124	tan glazing, window	exterior	Chrysotile	1.4		2
A-L1-HA40	-125	window caulk	exterior west		NA		
A-L1-HA40	-126	window caulk	exterior west		NA		
A-L1-HA41	-127	mortar	west wall			X	
A-L1-HA41	-128	mortar	west wall			X	
A-L1-HA41	-129	mortar	west wall			X	
A-L1-HA42	-130	window glazing	west area			X	
A-L1-HA42	-131	window glazing	west area			X	
A-L1-HA42	-132	window glazing	west area			X	
A-L1-HA43	-133	brick	west wall			X	
A-L1-HA43	-134	brick	west wall			X	
A-L1-HA43	-135	brick	west wall			X	
A-L1-HA44	-136	door caulk	south	Chrysotile	1.3		
A-L1-HA44	-137	door caulk	north		NA		
A-L1-HA44	-138	door caulk	east		NA		
A-L1-HA45	-139	lab top	west	Chrysotile	20		
A-L1-HA45	-140	lab top	east		NA		
A-L1-HA45	-141	lab top	center		NA		
A-L1-HA46	-142	plaster	west room			X	
A-L1-HA46	-143	plaster	north room			X	
A-L1-HA46	-144	plaster	center hallway			X	
A-L1-HA47	-145	plaster 2	north wall - brick behind			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building L1							
HSA	Sample Number	Material Description	Sample Location	Asbestos Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-L1-HA47	-146	plaster 2	north wall - brick behind			X	
A-L1-HA47	-147	plaster 2	north wall - brick behind			X	
<b>A-L1-HA48</b>	<b>-148</b>	<b>roof</b>	<b>bottom</b>	<b>Chrysotile</b>	<b>3.1</b>		
A-L1-HA48	-149	roof	middle			X	
A-L1-HA48	-150	roof	top			X	
AD-L1-HA48	-151	roof duplicate	top duplicate			X	
<b>A-L1-HA48</b>	<b>-152</b>	<b>roof</b>	<b>bottom</b>	<b>Chrysotile</b>	<b>4.4</b>		
A-L1-HA48	-153	roof	middle		NA		
A-L1-HA48	-154	roof	top			X	
<b>A-L1-HA48</b>	<b>-155</b>	<b>roof</b>	<b>bottom</b>	<b>Chrysotile</b>	<b>4.9</b>		
A-L1-HA48	-156	roof	middle		NA		
A-L1-HA48	-157	roof	top		NA		

**Note: All results greater than 1% are considered asbestos containing.**

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



**EAGLE ZINC OU1  
HILLSBORO, ILLINOIS**

10/20/2010

<b>ASBESTOS SAMPLE LOG – Building M</b>							
<b>HSA</b>	<b>Sample Number</b>	<b>Material Description</b>	<b>Sample Location</b>	<b>Type</b>	<b>% Asbestos</b>	<b>No Asbestos Detected</b>	<b>Sample Layers tested if more than 1</b>
<b>A-M-HA66</b>	<b>-210</b>	<b>roof flashing</b>	<b>west</b>	<b>Chrysotile</b>	<b>1.1</b>		
A-M-HA66	-211	roof flashing	NW		NA		
A-M-HA66	-212	roof flashing	south		NA		
A-M-HA67	-213	roof field multiple layers	west			X	
A-M-HA67	-214	roof field multiple layers	NW	Chrysotile	trace		1
<b>A-M-HA67</b>	<b>-214</b>	<b>roof field multiple layers</b>	<b>NW</b>	<b>Chrysotile</b>	<b>1.3</b>		2
A-M-HA67	-215	roof field multiple layers	south			X	1
A-M-HA67	-215	roof field multiple layers	south	Chrysotile	trace		2
A-M-HA68	-216	roof caulking	west	Chrysotile	0.5		
<b>A-M-HA68</b>	<b>-217</b>	<b>roof caulking</b>	<b>NW</b>	<b>Chrysotile</b>	<b>1.2</b>		
A-M-HA68	-218	roof caulking	south		NA		
<b>A-M-HA69</b>	<b>-219</b>	<b>thermal systems air cell</b>	<b>garage engineer office west</b>	<b>Chrysotile</b>	<b>55</b>		
A-M-HA69	-220	thermal systems air cell	garage engineer office south		NA		
A-M-HA69	-221	thermal systems air cell	interior office area NW		NA		
<b>A-M-HA70</b>	<b>-222</b>	<b>transite</b>	<b>break room</b>	<b>Chrysotile</b>	<b>25</b>		
A-M-HA70	-223	transite	lunch room		NA		
A-M-HA70	-224	transite	locker room		NA		
AD-M-HA70	-225	transite duplicate	wall of break room				
A-M-HA71	-226	plaster	on support beams of break room			X	
A-M-HA71	-227	plaster	support beam of lunch room			X	
A-M-HA71	-228	plaster	support beam of locker room			X	
A-M-HA72	-229	drywall	locker room east wall			X	
A-M-HA72	-230	drywall	locker room south wall			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building M							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-M-HA72	-231	drywall	locker room east wall			X	
A-M-HA73	-232	drywall joint compound	locker room east wall			X	
A-M-HA73	-233	drywall joint compound	locker room east wall			X	
A-M-HA73	-234	drywall joint compound	locker room south wall			X	
A-M-HA74	-235	2'x4' ceiling tile selio	central office at break room north			X	
A-M-HA74	-236	2'x4' ceiling tile selio	central office at break room east			X	
A-M-HA74	-237	2'x4' ceiling tile selio	central office at break room south			X	
A-M-HA75	-238	2'x4' ceiling tile perforated	central office at break room south			X	
A-M-HA75	-239	2'x4' ceiling tile perforated	central office at break room central			X	
A-M-HA75	-240	2'x4' ceiling tile perforated	central office at break room east			X	
A-M-HA76	-241	12"x12" ceiling tile perforated	garage engineer office			X	
A-M-HA76	-242	12"x12" ceiling tile perforated	garage engineer office			X	
A-M-HA76	-243	12"x12" ceiling tile perforated	garage engineer office			X	
A-M-HA77	-244	door caulk interior	garage door north	Chrysotile	1.7		
A-M-HA77	-245	door caulk interior	garage door east		NA		
A-M-HA77	-246	door caulk interior	garage door south		NA		
A-M-HA78	-247	exterior window glazing	north			X	
A-M-HA78	-248	exterior window glazing	west			X	
A-M-HA78	-249	exterior window glazing	east			X	
A-M-HA79	-250	exterior window caulking red	south			X	
A-M-HA79	-251	exterior window caulking red	south			X	
A-M-HA79	-252	exterior window caulking red	south			X	
A-M-HA80	-253	exterior window caulking white	east			X	



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building M							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-M-HA80	-254	exterior window caulking white	NE			X	
A-M-HA80	-255	exterior window caulking white	west			X	
AD-M-HA80	-256	exterior window caulking white duplicate	west			X	

**Note: All results greater than 1% are considered asbestos containing.**

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**EAGLE ZINC OU1  
HILLSBORO, ILLINOIS**

10/20/2010

<b>ASBESTOS SAMPLE LOG – Building N</b>							
<b>HSA</b>	<b>Sample Number</b>	<b>Material Description</b>	<b>Sample Location</b>	<b>Type</b>	<b>% Asbestos</b>	<b>No asbestos detected</b>	<b>Samples Layers tested if more than 1</b>
A-N-HA49	-158	12"x12" tan floor tile	central office	Chrysotile	10		1
A-N-HA49	-158	Black mastic on floor tile	central office	Chrysotile	2.1		2
A-N-HA49	-159	tan/ black mastic/ leveling compound	SE office			X	
A-N-HA49	-160	tan/ black mastic/ leveling compound	SE office			X	
A-N-HA50	-161	tan floor tile	SE office north	Chrysotile	10		1
A-N-HA50	-161	black mastic	SE office north	Chrysotile	2.2		2
A-N-HA50	-161	tan/ black mastic/ leveling compound	SE office north			X	3
A-N-HA50	-162-163	tan/ black mastic/ leveling compound	central office south and center			X	
A-N-HA51	-164	12"x12" brown floor tile	SE office SE	Chrysotile	10		1
A-N-HA51	-164	black mastic on brown floor tile	SE office SE	Chrysotile	1.5		2
A-N-HA51	-164	black mastic	SE office SE			X	3
A-N-HA51	-165-166	black mastic A/W 12x12 floor tile	SE office E central and north			X	
A-N-HA52	-167	12"x12" ceiling tile	SE office			X	
A-N-HA52	-168	12"x12" ceiling tile	Central office			X	
A-N-HA52	-169	12"x12" ceiling tile	NW office			X	
A-N-HA53	-170	12"x12" grey floor tile	NW office SE	Chrysotile	10		1
A-N-HA53	-170	black mastic on grey floor tile	NW office SE	Chrysotile	2.5		2
A-N-HA53	-170	tan/black mastic/ leveling compound	NW office SE			X	3
A-N-HA53	-171-172	tan/ balck mastic/ leveling compound	NW office S & SW			X	
A-N-HA54	-173	12"x12" ceiling tile	SE office closet			X	
A-N-HA54	-174	12"x12" ceiling tile	SE office closet			X	
A-N-HA54	-175	12"x12" ceiling tile	SE office closet			X	
A-N-HA55	-176	transite ceiling panel	center mechanical room	Chrysotile	20		
A-N-HA55	-177	transite ceiling panel	center mechanical room		NA		
A-N-HA55	-178	transite ceiling panel	center mechanical room		NA		



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/20/2010

ASBESTOS SAMPLE LOG – Building N							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No asbestos detected	Samples Layers tested if more than 1
A-N-HA56	-179	window glazing	exterior window N	Chrysotile	1.2		
A-N-HA56	-180	window glazing	exterior window E		NA		
A-N-HA56	-181	window glazing	exterior window S		NA		
A-N-HA57	-182	roofing material	north			X	
A-N-HA57	-183	roofing material	east			X	
A-N-HA57	-184	roofing material	west			X	

**Note:** All results greater than 1% are considered asbestos containing.

X = No Asbestos Detected

NA = sample not analyzed due to previous positive sample



ASBESTOS SAMPLE LOG – Building O							
HSA	Sample Number	Material Description	Sample Location	Type	% Asbestos	No Asbestos detected	Sample Layers tested if more than 1
A-O-HA58	-185	window glazing	south			X	
A-O-HA58	-186	window glazing	west			X	
A-O-HA58	-187	window glazing	north			X	
<b>A-O-HA59</b>	<b>-188</b>	<b>roofing material caulking</b>	<b>east</b>	<b>Chrysotile</b>	<b>15</b>		
A-O-HA59	-189	roofing material caulking	north		NA		
A-O-HA59	-190	roofing material caulking	south		NA		
A-O-HA60	-191	roof flashing	east			X	
A-O-HA60	-192	roof flashing	north			X	
A-O-HA60	-193	roof flashing	south			X	
A-O-HA60	-194	roof flashing duplicate	south			X	
A-O-HA61	-195	asphalt shingle	east			X	
A-O-HA61	-196	asphalt shingle	north			X	
A-O-HA61	-197	asphalt shingle	south			X	
A-O-HA62	-198	asphalt roof sealant	east	Chrysotile	Trace		
A-O-HA62	-199	asphalt roof sealant	north	Chrysotile	0.25		
A-O-HA62	-200	asphalt roof sealant	south	Chrysotile	0.25		
<b>A-O-HA63</b>	<b>-201</b>	<b>exterior window caulk</b>	<b>east</b>	<b>Chrysotile</b>	<b>1.4</b>		
A-O-HA63	-202	exterior window caulk	east		NA		
A-O-HA63	-203	exterior window caulk	west		NA		
A-O-HA64	-204	exterior door caulk	east			X	
A-O-HA64	-205	exterior door caulk	east			X	
A-O-HA64	-206	exterior door caulk	east			X	

Note: All results greater than 1% are considered asbestos containing.

X = No Asbestos Detected

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ASBESTOS SAMPLE LOG – Buildings P1 & P2							
HSA	Sample Number	Material Description	Sample Location	Type	% asbestos	No Asbestos Detected	Sample Layers tested if more than 1
A-P1-HA81	-257	exterior window caulk	west	Chrysotile	1.5		
A-P1-HA81	-258	exterior window caulk	north		NA		
A-P1-HA81	-259	exterior window caulk	south		NA		
A-P1-HA82	-260	exterior door caulk	west	Chrysotile	3.1		
A-P1-HA82	-261	exterior door caulk	north		NA		
A-P1-HA82	-262	interior door caulk	east		NA		
A-P1-HA83	-263	interior window glazing	west			X	
A-P1-HA83	-264	interior window glazing	north			X	
A-P1-HA83	-265	interior window glazing	south			X	
A-P1-HA84	-266	asphalt roof field	south			X	
A-P1-HA84	-267	asphalt roof field	SE			X	
A-P1-HA84	-268	asphalt roof field	SW			X	
A-P2-HA85	-269	roof field	N central	Chrysotile	5.3		
A-P2-HA85	-269	roof field - layers 2 & 3	N central			X	
A-P2-HA85	-270-271	roof field	NE & NW			X	

**Note: All results greater than 1% are considered asbestos containing.**

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NA = sample not analyzed due to previous positive sample



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg B
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070239	<b>Description / Location:</b>	Off-White Mortar	
<b>Client No.:</b>	A-B-HA1-01		N. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070241	<b>Description / Location:</b>	Off-White Mortar	
<b>Client No.:</b>	A-B-HA1-02		E. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070241	<b>Description / Location:</b>	Off-White Mortar	
<b>Client No.:</b>	A-B-HA1-03		S. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070242	<b>Description / Location:</b>	Orange Brick	
<b>Client No.:</b>	A-B-HA2-04		S. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Approved By:**

**Date:** 9/2/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg B  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070243	<b>Description / Location:</b>	Lt. Brown Brick	
<b>Client No.:</b>	A-B-HA2-05		N. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070244	<b>Description / Location:</b>	Lt. Brown Brick	
<b>Client No.:</b>	A-B-HA2-06		E. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070245	<b>Description / Location:</b>	Grey Concrete	
<b>Client No.:</b>	A-B-HA3-07		S. Wall Tin Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070246	<b>Description / Location:</b>	Grey Concrete	
<b>Client No.:</b>	A-B-HA3-08		Lower S. Wall Tin Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



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Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg B  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070247	<b>Description / Location:</b>	Grey Concrete	
<b>Client No.:</b>	A-B-HA3-09		Lower N. Wall Tin Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070248	<b>Description / Location:</b>	Off-White Mortar; Cinder Block	
<b>Client No.:</b>	A-B-HA4-10		E. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070249	<b>Description / Location:</b>	Off-White Mortar; Cinder Block	
<b>Client No.:</b>	A-B-HA4-11		S. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070250	<b>Description / Location:</b>	Lt. Grey Mortar; Cinder Block	
<b>Client No.:</b>	A-B-HA4-12		S. Wall Main Building West End	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg B
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070251	<b>Description / Location:</b>	Black/Silver Window Asphalt Paper	
<b>Client No.:</b>	A-B-HA5-13		N. Wall W.End Window Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4070252	<b>Description / Location:</b>	Black Window Asphalt Paper	
<b>Client No.:</b>	A-B-HA5-14		E. Wall S.End Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	25	Cellulose	75

<b>Lab No.:</b>	4070253	<b>Description / Location:</b>	Black Window Asphalt Paper	
<b>Client No.:</b>	A-B-HA5-15		S. Wall Main Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 8.7	Chrysotile	15	Cellulose	PC 76.3

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9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg B  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070254	<b>Description / Location:</b>	Silver Metal	
<b>Client No.:</b>	A-B-HA6-16		E. Wall Exterior Tin Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070254	<b>Description / Location:</b>	Black Mastic		<b>Layer No.:</b>	2
<b>Client No.:</b>	A-B-HA6-16		E. Wall Exterior Tin Building			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>		
None Detected	None Detected	None Detected	None Detected	100		

<b>Lab No.:</b>	4070255	<b>Description / Location:</b>	Silver Metal			
<b>Client No.:</b>	A-B-HA6-17		N. Wall E. End Tin Building			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>		
None Detected	None Detected	None Detected	None Detected	100		

<b>Lab No.:</b>	4070255	<b>Description / Location:</b>	Black Mastic		<b>Layer No.:</b>	2
<b>Client No.:</b>	A-B-HA6-17		N. Wall E. End Tin Building			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>		
PC 0.75	Chrysotile	None Detected	None Detected	PC 99.25		

**NIST-NVLAP No. 101165-0**

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
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Fax: 856-231-9818

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<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg B
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070256	<b>Description / Location:</b>	Silver Metal	
<b>Client No.:</b>	A-B-HA6-18		N. Wall W. End Tin Building	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070256	<b>Description / Location:</b>	Black Mastic	<b>Layer No.:</b>	2
<b>Client No.:</b>	A-B-HA6-18		N. Wall W. End Tin Building		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC 1.2	Chrysotile	None Detected	None Detected	PC 98.8	

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**Date:** 9/2/2010



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Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
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Fax: 856-231-9818

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070297	<b>Description / Location:</b>	Off-White Glazing	
<b>Client No.:</b>	A-C-HA7-19		Window, West Wall At Entrance	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070298	<b>Description / Location:</b>	Grey Glazing	
<b>Client No.:</b>	A-C-HA7-20		Window, South Wall At Entrance	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.8	Chrysotile	None Detected	None Detected	PC 97.2

<b>Lab No.:</b>	4070299	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-C-HA7-21			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070300	<b>Description / Location:</b>	Off-White Window Caulk	
<b>Client No.:</b>	A-C-HA8-22		North Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 4.2	Chrysotile	None Detected	None Detected	PC 95.8

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** V. Smith

**Approved By:**

**Date:** 9/1/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

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33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg C  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

**Lab No.:** 4070301 **Description / Location:** Sample Not Analyzed  
**Client No.:** A-C-HA8-23

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**Lab No.:** 4070302 **Description / Location:** Sample Not Analyzed  
**Client No.:** A-C-HA8-24

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**Lab No.:** 4070303 **Description / Location:** Grey Fibrous/Rubber  
**Client No.:** A-C-HA9-25 Vibration Damper

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	10	Synthetic	60
		30	Cellulose	

**Lab No.:** 4070304 **Description / Location:** Black Rubber  
**Client No.:** A-C-HA9-26 Vibration Damper

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	10	Synthetic	90

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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**Analysis Performed By:** V. Smith

**Date:** 9/1/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg C
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070305	<b>Description / Location:</b>	Black Fibrous/Rubber
<b>Client No.:</b>	A-C-HA9-27		Vibration Damper
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	20	Cellulose
		10	Synthetic
			70

<b>Lab No.:</b>	4070306	<b>Description / Location:</b>	Tan Brick
<b>Client No.:</b>	A-C-HA10-28		Furnace East
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070307	<b>Description / Location:</b>	Tan Brick
<b>Client No.:</b>	A-C-HA10-29		Furnace West
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070308	<b>Description / Location:</b>	Tan Brick
<b>Client No.:</b>	A-C-HA10-30		Furnace West
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

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**Date:** 9/1/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg C
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070309	<b>Description / Location:</b>	Off-White Brick	
<b>Client No.:</b>	A-C-HA10-31		Furnace Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070310	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-C-HA11-32		Furnace East	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070311	<b>Description / Location:</b>	Tan Mortar	
<b>Client No.:</b>	A-C-HA11-33		Furnace West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

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**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg C  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070312	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-C-HA11-34		Furnace West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070312	<b>Description / Location:</b>	White Brick	<b>Layer No.:</b> 2
<b>Client No.:</b>	A-C-HA11-34		Furnace West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070313	<b>Description / Location:</b>	Off-White Cementitious	
<b>Client No.:</b>	A-C-HA12-35		N. Furnace South Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070314	<b>Description / Location:</b>	White Cementitious	
<b>Client No.:</b>	A-C-HA12-36		N. Furnace South Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

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Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg C
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070315	<b>Description / Location:</b>	White Cementitious	
<b>Client No.:</b>	A-C-HA12-37		N. Furance East Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070316	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-C-HA13-38		N. Furance South Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070317	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-C-HA13-39		N. Furance West Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070318	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-C-HA13-40		N. Furance West Side	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** V. Smith

**Date:** 9/1/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg C
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070319	<b>Description / Location:</b>	Off-White Brick
<b>Client No.:</b>	A-C-HA14-41		N. Furance West Side
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070320	<b>Description / Location:</b>	Brown Brick
<b>Client No.:</b>	A-C-HA14-42		N. Furance South Side
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070321	<b>Description / Location:</b>	Brown Brick
<b>Client No.:</b>	A-C-HA14-43		N. Furance North Side
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070322	<b>Description / Location:</b>	Lt. Green Insulation
<b>Client No.:</b>	A-C-HA15-44		E. Furance
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	98	Mineral Wool
			2

**NIST-NVLAP No. 101165-0**

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**Date:** 9/1/2010



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**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg C  
**Project No.:** 1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070323	<b>Description / Location:</b>	Lt. Green Insulation	
<b>Client No.:</b>	A-C-HA15-45		W. Furance	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Mineral Wool	2

<b>Lab No.:</b>	4070324	<b>Description / Location:</b>	Lt. Green Insulation	
<b>Client No.:</b>	A-C-HA15-46		W. Furance	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Mineral Wool	2

<b>Lab No.:</b>	4070325	<b>Description / Location:</b>	Black Tar	
<b>Client No.:</b>	A-C-HA16-47		Pipe	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.6	Chrysotile	None Detected	None Detected	PC 97.4

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**NY-DOH No. 11021**

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**Date:** 9/1/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070257	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	A-D2-HA17-48		Roof Sealant D2
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
25	Chrysotile	None Detected	None Detected
			75

<b>Lab No.:</b>	4070258	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	A-D2-HA17-49		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4070259	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	A-D2-HA17-50		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4070260	<b>Description / Location:</b>	Brown Roof Mortar
<b>Client No.:</b>	A-D2-HA18-51		Roof D2
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

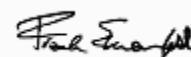
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**Analysis Performed By:** R. Caran

**Approved By:**



**Date:** 9/1/2010

Frank E. Ehrenfeld, III  
Laboratory Director

# CERTIFICATE OF ANALYSIS

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070261	<b>Description / Location:</b>	Brown Roof Mortar
<b>Client No.:</b>	A-D2-HA18-52		Roof D3
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070262	<b>Description / Location:</b>	Brown Roof Mortar
<b>Client No.:</b>	A-D2-HA18-53		Roof D4
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070263	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	A-D2-HA19-54		D2
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070264	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	A-D2-HA19-55		D3
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070265	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-D2-HA19-56		D3	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070266	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-D2-HA20-57		D2	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070267	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-D2-HA20-58		D2	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070268	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	A-D2-HA20-59		D3	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070269	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	A-D2-HA20-60		D4
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070270	<b>Description / Location:</b>	Red Brick
<b>Client No.:</b>	A-D2-HA21-61		D2
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070271	<b>Description / Location:</b>	Red Brick
<b>Client No.:</b>	A-D2-HA21-62		D3
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070272	<b>Description / Location:</b>	Red Brick
<b>Client No.:</b>	A-D2-HA21-63		D4
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070273	<b>Description / Location:</b>	Black Tar Paper	
<b>Client No.:</b>	A-D1-HA22-64		Roof D1 Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	50	Cellulose	50

<b>Lab No.:</b>	4070274	<b>Description / Location:</b>	Black Tar Paper	
<b>Client No.:</b>	A-D1-HA22-65		Roof D1 Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.5	Chrysotile	40	Cellulose	PC 58.5

<b>Lab No.:</b>	4070275	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA22-66			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070276	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	A-D1-HA22-67		D1 Top	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.2	Chrysotile	30	Cellulose	PC 67.8

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070277	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA22-68			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070278	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA22-69			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070279	<b>Description / Location:</b>	Grey Woven Fibers	
<b>Client No.:</b>	A-D1-HA23-70		Filtering Sock	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	96	Synthetic	4

<b>Lab No.:</b>	4070280	<b>Description / Location:</b>	Grey Woven Fibers	
<b>Client No.:</b>	A-D1-HA23-71		Filtering Sock	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	96	Synthetic	4

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070281	<b>Description / Location:</b>	Grey Woven Fibers
<b>Client No.:</b>	A-D1-HA23-72		Filtering Sock
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	96	Cellulose
			4

<b>Lab No.:</b>	4070282	<b>Description / Location:</b>	Grey Plaster
<b>Client No.:</b>	A-D1-HA24-73		D1
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070283	<b>Description / Location:</b>	Grey Plaster
<b>Client No.:</b>	A-D1-HA24-74		D1
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4070284	<b>Description / Location:</b>	Grey Plaster
<b>Client No.:</b>	A-D1-HA24-75		D1
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070285	<b>Description / Location:</b>	White Window Glazing	
<b>Client No.:</b>	A-D1-HA25-76		D1	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 3.6	Chrysotile	None Detected	None Detected	PC 96.4

<b>Lab No.:</b>	4070286	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA25-77			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070287	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA25-78			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070288	<b>Description / Location:</b>	White Ceiling Tile	
<b>Client No.:</b>	A-D1-HA26-79		D1 N Lab	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Fibrous Glass	10
		60	Cellulose	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070289	<b>Description / Location:</b>	White Ceiling Tile	
<b>Client No.:</b>	A-D1-HA26-80		D1 Restroom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Fibrous Glass	10
		60	Cellulose	

<b>Lab No.:</b>	4070291	<b>Description / Location:</b>	White Ceiling Tile	
<b>Client No.:</b>	A-D1-HA26-81		D1 Sink Area	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Fibrous Glass	10
		60	Cellulose	

<b>Lab No.:</b>	4070291	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	A-D1-HA27-82		D1 Walkway	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.1	Chrysotile	30	Cellulose	PC 67.9

<b>Lab No.:</b>	4070292	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA27-83			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building D
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070293	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	A-D1-HA27-84			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4070295	<b>Description / Location:</b>	Off-White Insulation	
<b>Client No.:</b>	A-D1-HA28-85			
			D1	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Fibrous Glass	2

<b>Lab No.:</b>	4070295	<b>Description / Location:</b>	Off-White Insulation	
<b>Client No.:</b>	A-D1-HA28-86			
			D1	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Fibrous Glass	2

<b>Lab No.:</b>	4070296	<b>Description / Location:</b>	Off-White Insulation	
<b>Client No.:</b>	A-D1-HA28-87			
			D1	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Fibrous Glass	2

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** R. Caran

**Date:** 9/1/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
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## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building D1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073073	<b>Description / Location:</b>	Grey Insulation	
<b>Client No.:</b>	AD1HA65207		Furnace Door North/Gasket	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
30	Chrysotile	50	Cellulose	20

<b>Lab No.:</b>	4073074	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AD1HA65208			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073075	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AD1HA65209			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** J. Haremza

**Approved By:**

**Date:** 9/3/2010

Frank E. Ehrenfeld, III  
Laboratory Director

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg H
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070233	<b>Description / Location:</b>	White/Tan Ceiling Tile	
<b>Client No.:</b>	A-H-HA30-92			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

<b>Lab No.:</b>	4070234	<b>Description / Location:</b>	White/Tan Ceiling Tile	
<b>Client No.:</b>	A-H-HA30-93			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

<b>Lab No.:</b>	4070235	<b>Description / Location:</b>	White/Tan Ceiling Tile	
<b>Client No.:</b>	A-H-HA30-94			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	35	Cellulose	30
		35	Fibrous Glass	

<b>Lab No.:</b>	4070236	<b>Description / Location:</b>	Tan Mortar	
<b>Client No.:</b>	A-H-HA30-95			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

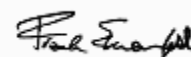
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Approved By:**



**Date:** 9/2/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Bldg H
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4070237	<b>Description / Location:</b>	Tan Mortar	
<b>Client No.:</b>	A-H-HA30-96			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4070238	<b>Description / Location:</b>	Tan Mortar	
<b>Client No.:</b>	A-H-HA30-97			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/2/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building H2
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073057	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA35-108		H2 Tank, Tin Shed E Of Tracks
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

<b>Lab No.:</b>	4073058	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA35-109		H2 Tank
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

<b>Lab No.:</b>	4073059	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA35-110		H2 Tank
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

<b>Lab No.:</b>	4073060	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA36-111		H2 Pipe
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

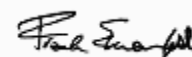
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Approved By:**



**Date:** 9/2/2010

Frank E. Ehrenfeld, III  
Laboratory Director

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building H2
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073061	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA36-112		H2 Pipe
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

<b>Lab No.:</b>	4073062	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AH2HA36-113		H2 Pipe
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	70	Fibrous Glass
			30

<b>Lab No.:</b>	4073063	<b>Description / Location:</b>	Lt. Grey Insulation
<b>Client No.:</b>	AH2HA37-114		H2 Pipe Air Cell
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
85	Chrysotile	10	Cellulose
			5

<b>Lab No.:</b>	4073064	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AH2HA37-115		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building H2
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073065	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AH2HA37-116			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073066	<b>Description / Location:</b>	Grey Insulation	
<b>Client No.:</b>	AH2HA38-117			
			H2 Pipe	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	70	Fibrous Glass	30

<b>Lab No.:</b>	4073067	<b>Description / Location:</b>	Grey Insulation	
<b>Client No.:</b>	AH2HA38-118			
			H2 Pipe	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	70	Fibrous Glass	30

<b>Lab No.:</b>	4073068	<b>Description / Location:</b>	Grey Insulation	
<b>Client No.:</b>	AH2HA38-119			
			H2 Pipe	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	70	Fibrous Glass	30

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zine Building H2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073069	<b>Description / Location:</b>	Lt. Grey Glazing	
<b>Client No.:</b>	AH2HA39-120		H3 Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.5	Chrysotile	None Detected	None Detected	PC 99.5

<b>Lab No.:</b>	4073070	<b>Description / Location:</b>	Tan Glazing	
<b>Client No.:</b>	AH2HA39-121		H3 Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC Trace	Chrysotile	None Detected	None Detected	100

<b>Lab No.:</b>	4073071	<b>Description / Location:</b>	Lt. Grey Glazing	
<b>Client No.:</b>	AH2HA39-122		H3 Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.25	Chrysotile	None Detected	None Detected	PC 99.75

<b>Lab No.:</b>	4073072	<b>Description / Location:</b>	Off-White Glazing	
<b>Client No.:</b>	AH2HA39-123		H3 Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.75	Chrysotile	None Detected	None Detected	PC 99.25

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010

# CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg J  
**Project No.:** 1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 4070326	<b>Description / Location:</b> Tan Insulation
<b>Client No.:</b> A-J-HA2988	J Furnace
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
20	Fibrous Glass
<u>% Non-Fibrous Material</u>	
	80

<b>Lab No.:</b> 4070327	<b>Description / Location:</b> Tan Insulation
<b>Client No.:</b> A-J-HA2989	DJ Furnace
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
20	Fibrous Glass
<u>% Non-Fibrous Material</u>	
	80

<b>Lab No.:</b> 4070328	<b>Description / Location:</b> Tan Insulation
<b>Client No.:</b> A-J-HA2990	J Furnace
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
20	Fibrous Glass
<u>% Non-Fibrous Material</u>	
	80

<b>Lab No.:</b> 4070329	<b>Description / Location:</b> Tan Insulation
<b>Client No.:</b> A-J-HA2991	J Furnace
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Trace	Cellulose
20	Fibrous Glass
<u>% Non-Fibrous Material</u>	
	80

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

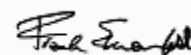
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Approved By:**



**Date:** 9/2/2010

Frank E. Ehrenfeld, III  
Laboratory Director

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building K
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073076	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AKHA3298		South
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 1.2	Chrysotile	20	Cellulose
			PC 78.8

<b>Lab No.:</b>	4073077	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AKHA3299		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073078	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AKHA32100		Southeast
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 4.1	Chrysotile	20	Cellulose
		15	Fibrous Glass
			PC 60.9

<b>Lab No.:</b>	4073079	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AKHA32101		Southeast
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 6.7	Chrysotile	20	Cellulose
		15	Fibrous Glass
			PC 58.3

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

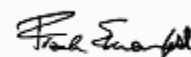
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Hargrove

**Approved By:**



**Date:** 9/10/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building K
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073080	<b>Description / Location:</b>	Orange Brick	
<b>Client No.:</b>	AKHA33102		South	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073081	<b>Description / Location:</b>	Orange Brick	
<b>Client No.:</b>	AKHA33103		South Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073082	<b>Description / Location:</b>	Orange Brick	
<b>Client No.:</b>	AKHA33104		Southeast	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073083	<b>Description / Location:</b>	Grey Mortar	
<b>Client No.:</b>	AKHA34105		South	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



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Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
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## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zine Building K
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073084	<b>Description / Location:</b>	Off-White Mortar	
<b>Client No.:</b>	AKHA34106		South Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073085	<b>Description / Location:</b>	Off-White Mortar	
<b>Client No.:</b>	AKHA34107		Southeast	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073483	<b>Description / Location:</b>	Black Tar
<b>Client No.:</b>	AL1HA40-124		Window, Exterior
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 5.3	Chrysotile	None Detected	None Detected
			PC 94.7

<b>Lab No.:</b>	4073483	<b>Description / Location:</b>	Tan Caulk	<b>Layer No.:</b>	2
<b>Client No.:</b>	AL1HA40-124		Window, Exterior		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC 1.4	Chrysotile	None Detected	None Detected	PC 98.6	

<b>Lab No.:</b>	4073484	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA40-125		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073485	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA40-126		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

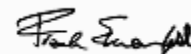
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Approved By:**



**Date:** 9/3/2010

Frank E. Ehrenfeld, III  
Laboratory Director

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073486	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-127		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073487	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-128		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073488	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-129		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073489	<b>Description / Location:</b>	Tan Glazing
<b>Client No.:</b>	AL1HA42-130		Window West Area
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073490	<b>Description / Location:</b>	Tan Glazing	
<b>Client No.:</b>	AL1HA42-131		Window West Area	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073491	<b>Description / Location:</b>	Off-White Glazing	
<b>Client No.:</b>	AL1HA42-132		Window West Area	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073492	<b>Description / Location:</b>	Red Brick	
<b>Client No.:</b>	AL1HA43-133		W. Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073493	<b>Description / Location:</b>	Red Brick	
<b>Client No.:</b>	AL1HA43-134		W. Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Building L1  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073494	<b>Description / Location:</b>	Red Brick	
<b>Client No.:</b>	AL1HA43-135		W. Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073496	<b>Description / Location:</b>	Tan Caulk	
<b>Client No.:</b>	AL1HA44-136		Door, South	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.3	Chrysotile	None Detected	None Detected	PC 98.7

<b>Lab No.:</b>	4073496	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA44-137			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073497	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA44-138			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**NIST-NVLAP No. 101165-0**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

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33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Building L1  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073498	<b>Description / Location:</b>	Grey Transite	
<b>Client No.:</b>	AL1HA45-139		Lab Top, West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Chrysotile	None Detected	None Detected	80

<b>Lab No.:</b>	4073499	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA45-140			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073500	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA45-141			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073501	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-142		West Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

**NIST-NVLAP No. 101165-0**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073502	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-143		North Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

<b>Lab No.:</b>	4073503	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-144		Center Hallway	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

<b>Lab No.:</b>	4073504	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-145		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073505	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-146		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073506	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-147		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073507	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AL1HA48-148		Roof W. Side Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 3.1	Chrysotile	15	Cellulose	PC 79.7
		5	Hair	

<b>Lab No.:</b>	4073508	<b>Description / Location:</b>	Black/Grey Shingle	
<b>Client No.:</b>	AL1HA48-149		Roof W. Side Middle	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	70

<b>Lab No.:</b>	4073509	<b>Description / Location:</b>	Black/Grey Shingle	
<b>Client No.:</b>	AL1HA48-150		Roof W. Side Top	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	35	Cellulose	65

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Hargrove

**Date:** 9/10/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073510	<b>Description / Location:</b>	Green/Black Shingle
<b>Client No.:</b>	AL1HA48-151		Roof W. Side Top
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	30	Cellulose
		5	Hair

<b>Lab No.:</b>	4073511	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AL1HA48-152		Roof N. Side Bottom
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 4.4	Chrysotile	Trace	Cellulose
		Trace	Hair

<b>Lab No.:</b>	4073512	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA48-153		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073513	<b>Description / Location:</b>	Green/Black Shingle
<b>Client No.:</b>	AL1HA48-154		Roof N. Side Top
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	30	Cellulose
		5	Hair

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073514	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AL1HA48-155		Roof N. Side Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 4.9	Chrysotile	None Detected	None Detected	PC 95.1

<b>Lab No.:</b>	4073515	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA48-156			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073516	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA48-157			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073483	<b>Description / Location:</b>	Black Tar
<b>Client No.:</b>	AL1HA40-124		Window, Exterior
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 5.3	Chrysotile	None Detected	None Detected
			PC 94.7

<b>Lab No.:</b>	4073483	<b>Description / Location:</b>	Tan Caulk	<b>Layer No.:</b>	2
<b>Client No.:</b>	AL1HA40-124		Window, Exterior		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC 1.4	Chrysotile	None Detected	None Detected	PC 98.6	

<b>Lab No.:</b>	4073484	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA40-125		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073485	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA40-126		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

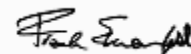
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Approved By:**



**Date:** 9/3/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

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33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Building L1  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073486	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-127		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073487	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-128		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073488	<b>Description / Location:</b>	Grey Mortar
<b>Client No.:</b>	AL1HA41-129		West Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073489	<b>Description / Location:</b>	Tan Glazing
<b>Client No.:</b>	AL1HA42-130		Window West Area
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

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	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073490	<b>Description / Location:</b>	Tan Glazing	
<b>Client No.:</b>	AL1HA42-131		Window West Area	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073491	<b>Description / Location:</b>	Off-White Glazing	
<b>Client No.:</b>	AL1HA42-132		Window West Area	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073492	<b>Description / Location:</b>	Red Brick	
<b>Client No.:</b>	AL1HA43-133		W. Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073493	<b>Description / Location:</b>	Red Brick	
<b>Client No.:</b>	AL1HA43-134		W. Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073494	<b>Description / Location:</b>	Red Brick
<b>Client No.:</b>	AL1HA43-135		W. Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073496	<b>Description / Location:</b>	Tan Caulk
<b>Client No.:</b>	AL1HA44-136		Door, South
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 1.3	Chrysotile	None Detected	None Detected
			PC 98.7

<b>Lab No.:</b>	4073496	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA44-137		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073497	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA44-138		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073498	<b>Description / Location:</b>	Grey Transite	
<b>Client No.:</b>	AL1HA45-139		Lab Top, West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Chrysotile	None Detected	None Detected	80

<b>Lab No.:</b>	4073499	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA45-140			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073500	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA45-141			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073501	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-142		West Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073502	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-143		North Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

<b>Lab No.:</b>	4073503	<b>Description / Location:</b>	Tan Plaster	
<b>Client No.:</b>	AL1HA46-144		Center Hallway	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Hair	100

<b>Lab No.:</b>	4073504	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-145		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073505	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-146		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073506	<b>Description / Location:</b>	Grey Plaster	
<b>Client No.:</b>	AL1HA47-147		N. Wall Brick Behind	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073507	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AL1HA48-148		Roof W. Side Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 3.1	Chrysotile	15	Cellulose	PC 79.7
		5	Hair	

<b>Lab No.:</b>	4073508	<b>Description / Location:</b>	Black/Grey Shingle	
<b>Client No.:</b>	AL1HA48-149		Roof W. Side Middle	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	70

<b>Lab No.:</b>	4073509	<b>Description / Location:</b>	Black/Grey Shingle	
<b>Client No.:</b>	AL1HA48-150		Roof W. Side Top	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	35	Cellulose	65

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Hargrove

**Date:** 9/10/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073510	<b>Description / Location:</b>	Green/Black Shingle
<b>Client No.:</b>	AL1HA48-151		Roof W. Side Top
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	30	Cellulose
		5	Hair

<b>Lab No.:</b>	4073511	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AL1HA48-152		Roof N. Side Bottom
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 4.4	Chrysotile	Trace	Cellulose
		Trace	Hair

<b>Lab No.:</b>	4073512	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AL1HA48-153		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073513	<b>Description / Location:</b>	Green/Black Shingle
<b>Client No.:</b>	AL1HA48-154		Roof N. Side Top
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	30	Cellulose
		5	Hair

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010



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Mount Laurel, NJ 08054  
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## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building L1
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073514	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AL1HA48-155		Roof N. Side Bottom	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 4.9	Chrysotile	None Detected	None Detected	PC 95.1

<b>Lab No.:</b>	4073515	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA48-156			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073516	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AL1HA48-157			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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**Analysis Performed By:** L. Solebello

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building M
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073389	<b>Description / Location:</b>	Black Shingle/Roof Material	
<b>Client No.:</b>	AMHA66-210		Roof Flashing West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.1	Chrysotile	20	Cellulose	PC 78.9

<b>Lab No.:</b>	4073390	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA66-211			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073391	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA66-212			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073392	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AMHA67-213		Roof Field West	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	20	Cellulose	80

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

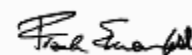
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**Analysis Performed By:** J. Haremza

**Approved By:**



**Date:** 9/3/2010

Frank E. Ehrenfeld, III  
Laboratory Director

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building M
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073393	<b>Description / Location:</b>	Black Shingle/Tar
<b>Client No.:</b>	AMHA67-214		Roof Field NW
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC Trace	Chrysotile	20	Cellulose
			80

<b>Lab No.:</b>	4073393	<b>Description / Location:</b>	Black Roof Material	<b>Layer No.:</b>	2
<b>Client No.:</b>	AMHA67-214		Roof Field NW		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC 1.3	Chrysotile	30	Cellulose	PC 68.7	

<b>Lab No.:</b>	4073394	<b>Description / Location:</b>	Black Shingle
<b>Client No.:</b>	AMHA67-215		Roof Field South
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	20	Cellulose
			80

<b>Lab No.:</b>	4073394	<b>Description / Location:</b>	Black Roof Material	<b>Layer No.:</b>	2
<b>Client No.:</b>	AMHA67-215		Roof Field South		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC Trace	Chrysotile	15	Cellulose	85	

**NIST-NVLAP No. 101165-0**

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**Analysis Performed By:** J. Haremza

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building M
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073395	<b>Description / Location:</b>	Black Tar
<b>Client No.:</b>	AMHA68-216		Roof Caulk West
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 0.5	Chrysotile	None Detected	None Detected
			PC 99.5

<b>Lab No.:</b>	4073396	<b>Description / Location:</b>	Black Caulk
<b>Client No.:</b>	AMHA68-217		Roof NW
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
PC 1.2	Chrysotile	None Detected	None Detected
			PC 98.8

<b>Lab No.:</b>	4073397	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	AMHA68-218		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	4073398	<b>Description / Location:</b>	Grey Insulation
<b>Client No.:</b>	AMHA69-219		Roof South
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
55	Chrysotile	35	Cellulose
			10

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073399	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA69-220			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073400	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA69-221			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073401	<b>Description / Location:</b>	Tan Transite	
<b>Client No.:</b>	AMHA70-222		Break Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
25	Chrysotile	None Detected	None Detected	75

<b>Lab No.:</b>	4073402	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA70-223			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073403	<b>Description / Location:</b>	Grey Transite
<b>Client No.:</b>	AMHA70-224		Locker Room
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
25	Chrysotile	None Detected	None Detected
			75

<b>Lab No.:</b>	4073404	<b>Description / Location:</b>	Grey Transite
<b>Client No.:</b>	ADMHA70-225		Wall Of Break Room
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
25	Chrysotile	None Detected	None Detected
			75

<b>Lab No.:</b>	4073405	<b>Description / Location:</b>	Tan Plaster
<b>Client No.:</b>	AMHA71-226		On Support Beam Break Room
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073406	<b>Description / Location:</b>	Tan Plaster
<b>Client No.:</b>	AMHA71-227		Lunch Room
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073407	<b>Description / Location:</b>	Tan Plaster
<b>Client No.:</b>	AMHA71-228		Locker Room
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073408	<b>Description / Location:</b>	White/Brown Sheetrock
<b>Client No.:</b>	AMHA72-229		Locker Room E Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	15	Cellulose
			85

<b>Lab No.:</b>	4073409	<b>Description / Location:</b>	White/Brown Sheetrock
<b>Client No.:</b>	AMHA72-230		Locker Room S Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	10	Cellulose
			90

<b>Lab No.:</b>	4073410	<b>Description / Location:</b>	White/Brown Sheetrock
<b>Client No.:</b>	AMHA72-231		Locker Room E Wall
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	10	Cellulose
			90

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**NY-DOH No. 11021**

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### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073411	<b>Description / Location:</b>	White Joint Compound	
<b>Client No.:</b>	AMHA73-232		Locker Room E Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073412	<b>Description / Location:</b>	White Joint Compound	
<b>Client No.:</b>	AMHA73-233		Locker Room E Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073413	<b>Description / Location:</b>	White Joint Compound	
<b>Client No.:</b>	AMHA73-234		Locker Room S Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073414	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA74-235		Central Office @ Break Room N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073415	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA74-236		Central Office @ Break Room E	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

<b>Lab No.:</b>	4073416	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA74-237		Central Office @ Break Room S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

<b>Lab No.:</b>	4073417	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA75-238		Central Office @ Break Room S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	30
		40	Mineral Wool	

<b>Lab No.:</b>	4073418	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA75-239		Central Office @ Break Room Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	30
		40	Mineral Wool	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073419	<b>Description / Location:</b>	Tan/White Ceiling Tile; 2x4	
<b>Client No.:</b>	AMHA75-240		Central Office @ Break Room E	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	30
		40	Mineral Wool	

<b>Lab No.:</b>	4073420	<b>Description / Location:</b>	Tan/White Ceiling Tile; 12x12	
<b>Client No.:</b>	AMHA76-241		Garage Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

<b>Lab No.:</b>	4073421	<b>Description / Location:</b>	Tan/White Ceiling Tile; 12x12	
<b>Client No.:</b>	AMHA76-242		Garage Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

<b>Lab No.:</b>	4073422	<b>Description / Location:</b>	Tan/White Ceiling Tile; 12x12	
<b>Client No.:</b>	AMHA76-243		Garage Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	20

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073423	<b>Description / Location:</b>	Tan Door Caulk; Interior	
<b>Client No.:</b>	AMHA77-244		Garage Door N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.7	Chrysotile	None Detected	None Detected	PC 98.3

<b>Lab No.:</b>	4073424	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA77-245			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073425	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AMHA77-246			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073426	<b>Description / Location:</b>	White Window Glazing; Exterior	
<b>Client No.:</b>	AMHA78-247		N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

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## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073427	<b>Description / Location:</b>	White Window Glazing; Exterior	
<b>Client No.:</b>	AMHA78-248		W	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073429	<b>Description / Location:</b>	White Window Glazing; Exterior	
<b>Client No.:</b>	AMHA78-249		E	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073429	<b>Description / Location:</b>	Clear Window Caulk; Exterior	
<b>Client No.:</b>	AMHA79-250		S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073430	<b>Description / Location:</b>	Clear Window Caulk; Exterior	
<b>Client No.:</b>	AMHA79-251		S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

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**Analysis Performed By:** J. Haremza

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building M
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073431	<b>Description / Location:</b>	Clear Window Caulk; Exterior
<b>Client No.:</b>	AMHA79-252		S
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073432	<b>Description / Location:</b>	White Window Glazing; Exterior
<b>Client No.:</b>	AMHA80-253		E
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073433	<b>Description / Location:</b>	White Window Glazing; Exterior
<b>Client No.:</b>	AMHA80-254		NE
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

<b>Lab No.:</b>	4073433	<b>Description / Location:</b>	Grey Cementitious	<b>Layer No.:</b>	2
<b>Client No.:</b>	AMHA80-254		NE		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	None Detected	None Detected	100	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** J. Haremza

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building M
	Chicago IL 60603	<b>Project No.:</b>	1515.017.03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073434	<b>Description / Location:</b>	White Window Glazing; Exterior	
<b>Client No.:</b>	AMHA80-255		W	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073435	<b>Description / Location:</b>	White Window Glazing; Exterior	
<b>Client No.:</b>	ADMHA80-256		W	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073435	<b>Description / Location:</b>	Grey Cementitious	<b>Layer No.:</b> 2
<b>Client No.:</b>	ADMHA80-256		W	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** J. Haremza

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073517	<b>Description / Location:</b>	Tan Floor Tile; 12x12
<b>Client No.:</b>	ANHA49-158		Central Office
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Chrysotile	None Detected	None Detected
			90

<b>Lab No.:</b>	4073517	<b>Description / Location:</b>	Black Mastic	<b>Layer No.:</b>	2
<b>Client No.:</b>	ANHA49-158		Central Office		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
PC 2.1	Chrysotile	None Detected	None Detected	PC 97.9	

<b>Lab No.:</b>	4073517	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	<b>Layer No.:</b>	3
<b>Client No.:</b>	ANHA49-158		Central Office		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	None Detected	None Detected	100	

<b>Lab No.:</b>	4073518	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound
<b>Client No.:</b>	ANHA49-159		SE Office
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

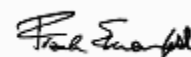
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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Approved By:**



**Date:** 9/4/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073519	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	
<b>Client No.:</b>	ANHA49-160		NW Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073520	<b>Description / Location:</b>	Tan Floor Tile	
<b>Client No.:</b>	ANHA50-161		SE Office N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
10	Chrysotile	None Detected	None Detected	90

<b>Lab No.:</b>	4073520	<b>Description / Location:</b>	Black Mastic	<b>Layer No.:</b> 2
<b>Client No.:</b>	ANHA50-161		SE Office N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.2	Chrysotile	None Detected	None Detected	PC 97.8

<b>Lab No.:</b>	4073520	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	<b>Layer No.:</b> 3
<b>Client No.:</b>	ANHA50-161		SE Office N	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073521	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	
<b>Client No.:</b>	ANHA50-162		SE Office S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073522	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	
<b>Client No.:</b>	ANHA50-163		Central Office Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Date:** 9/4/2010



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Toll Free 877-428-4285  
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## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/15/2010  
**Project:** Eagle Zinc, Building N  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 4073523	<b>Description / Location:</b> Brown Floor Tile; 12x12			
<b>Client No.:</b> ANHA51-164	SE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
10	Chrysotile	None Detected	None Detected	90

<b>Lab No.:</b> 4073523	<b>Description / Location:</b> Black Mastic	<b>Layer No.:</b> 2		
<b>Client No.:</b> ANHA51-164	SE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.5	Chrysotile	None Detected	None Detected	PC 98.5

<b>Lab No.:</b> 4073523	<b>Description / Location:</b> Tan Mastic	<b>Layer No.:</b> 3		
<b>Client No.:</b> ANHA51-164	SE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b> 4073524	<b>Description / Location:</b> Tan Mastic A/W 12x12 Floor Tile			
<b>Client No.:</b> ANHA51-165	SE Office E Central			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073525	<b>Description / Location:</b>	Tan Mastic A/W 12x12 Floor Tile	
<b>Client No.:</b>	ANHA51-166		SE Office North	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073526	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA52-167		SE Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

<b>Lab No.:</b>	4073527	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA52-168		Central Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

<b>Lab No.:</b>	4073528	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA52-169		NW Office	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010



9000 Commerce Parkway, Suite B  
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## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/15/2010  
**Project:** Eagle Zinc, Building N  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 4073529	<b>Description / Location:</b> Grey Floor Tile; 12x12			
<b>Client No.:</b> ANHA53-170	NE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
10	Chrysotile	None Detected	None Detected	90

<b>Lab No.:</b> 4073529	<b>Description / Location:</b> Black Mastic	<b>Layer No.:</b> 2		
<b>Client No.:</b> ANHA53-170	NE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.5	Chrysotile	None Detected	None Detected	PC 97.5

<b>Lab No.:</b> 4073529	<b>Description / Location:</b> Tan/Black Mastic/Leveling Compound	<b>Layer No.:</b> 3		
<b>Client No.:</b> ANHA53-170	NE Office SE			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b> 4073530	<b>Description / Location:</b> Tan/Black Mastic/Leveling Compound			
<b>Client No.:</b> ANHA53-171	S Central NW Office			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073531	<b>Description / Location:</b>	Tan/Black Mastic/Leveling Compound	
<b>Client No.:</b>	ANHA53-172		NW Office SW	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073532	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA54-173		SE Office Closet	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

<b>Lab No.:</b>	4073533	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA54-174		SE Office Closet	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

<b>Lab No.:</b>	4073534	<b>Description / Location:</b>	Tan Ceiling Tile; 12x12	
<b>Client No.:</b>	ANHA54-175		SE Office Closet	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Cellulose	None Detected

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073535	<b>Description / Location:</b>	Grey Transite	
<b>Client No.:</b>	ANHA55-176		Ceiling Panel Center Mech. Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Chrysotile	None Detected	None Detected	80

<b>Lab No.:</b>	4073536	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	ANHA55-177			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073537	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	ANHA55-178			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073538	<b>Description / Location:</b>	Grey Glazing	
<b>Client No.:</b>	ANHA56-179		N. Exterior Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.2	Chrysotile	None Detected	None Detected	PC 98.8

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**NY-DOH No. 11021**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010

# CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073539	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	ANHA56-180			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073541	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	ANHA56-181			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073541	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	ANHA57-182		N. Roofing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	40	Fibrous Glass	60

<b>Lab No.:</b>	4073542	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	ANHA57-183		E. Roofing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	40	Fibrous Glass	60

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/15/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc, Building N
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073543	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	ANHA57-184		W. Roofing	
<b>% Asbestos</b>	<b>Type</b>	<b>% Non-Asbestos Fibrous Material</b>	<b>Type</b>	<b>% Non-Fibrous Material</b>
None Detected	None Detected	40	Fibrous Glass	60

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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**Analysis Performed By:** B. Fauseit

**Date:** 9/4/2010



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## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building O
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073544	<b>Description / Location:</b>	White Glazing	
<b>Client No.:</b>	AOHA58-185		S. Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073545	<b>Description / Location:</b>	White Glazing	
<b>Client No.:</b>	AOHA58-186		W. Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073546	<b>Description / Location:</b>	White Glazing	
<b>Client No.:</b>	AOHA58-187		N. Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073547	<b>Description / Location:</b>	Black Caulk	
<b>Client No.:</b>	AOHA59-188		E. Roof	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
15	Chrysotile	None Detected	None Detected	85

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** M. Gallagher

**Approved By:**

**Date:** 9/3/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building O
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073548	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AOHA59-189			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073549	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AOHA59-190			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073550	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AOHA60-191		E. Roof Flashing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	40	Cellulose	60

<b>Lab No.:</b>	4073551	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AOHA60-192		N. Roof Flashing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	40	Cellulose	60

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** M. Gallagher

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	Environ. Design International	<b>Report Date:</b>	9/16/2010
	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building O
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073552	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AOHA60-193		S. Roof Flashing
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	40	Cellulose
			60

<b>Lab No.:</b>	4073553	<b>Description / Location:</b>	Black Roof Material
<b>Client No.:</b>	AOHA60-194		S. Roof Flashing
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	30	Cellulose
			70

<b>Lab No.:</b>	4073554	<b>Description / Location:</b>	Black/Grey Roof Material
<b>Client No.:</b>	AOHA61-195		E.
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	25	Fibrous Glass
			75

<b>Lab No.:</b>	4073555	<b>Description / Location:</b>	Black/Grey Roof Material
<b>Client No.:</b>	AOHA61-196		N.
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	25	Fibrous Glass
			75

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**Analysis Performed By:** M. Gallagher

**Date:** 9/3/2010

## CERTIFICATE OF ANALYSIS

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	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073556	<b>Description / Location:</b>	Black/Grey Roof Material	
<b>Client No.:</b>	AOHA61-197		S.	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	25	Fibrous Glass	75

<b>Lab No.:</b>	4073557	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AOHA62-198		E.	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC Trace	Chrysotile	25	Cellulose	75

<b>Lab No.:</b>	4073558	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AOHA62-199		N.	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.25	Chrysotile	25	Cellulose	PC 74.75

<b>Lab No.:</b>	4073559	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AOHA62-200		S.	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.25	Chrysotile	25	Cellulose	PC 74.75

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

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**Analysis Performed By:** M. Gallagher

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

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	33 W Monroe, Suite 1825	<b>Project:</b>	Eagle Zinc Building O
	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073560	<b>Description / Location:</b>	Black/White Caulk	
<b>Client No.:</b>	AOHA63-201		E. Exterior Window	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 1.4	Chrysotile	None Detected	None Detected	PC 98.6

<b>Lab No.:</b>	4073561	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AOHA63-202			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073562	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	AOHA63-203			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

<b>Lab No.:</b>	4073563	<b>Description / Location:</b>	White/Tan Caulk	
<b>Client No.:</b>	AOHA64-204		E. Exterior Door	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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**Analysis Performed By:** M. Gallagher

**Date:** 9/3/2010



9000 Commerce Parkway, Suite B  
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Toll Free 877-428-4285  
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	Chicago IL 60603	<b>Project No.:</b>	1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073564	<b>Description / Location:</b>	White Caulk	
<b>Client No.:</b>	AOHA64-205		E. Exterior Door	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073565	<b>Description / Location:</b>	White/Tan Caulk	
<b>Client No.:</b>	AOHA64-206		E. Exterior Door	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** M. Gallagher

**Date:** 9/3/2010

# CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 4073086	<b>Description / Location:</b> Lt. Tan Caulk
<b>Client No.:</b> APIHA81-257	Exterior Window, W
<u>% Asbestos</u>	<u>Type</u>
PC 1.5	Chrysotile
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Fibrous Material</u>
	PC 98.5

<b>Lab No.:</b> 4073087	<b>Description / Location:</b> Sample Not Analyzed
<b>Client No.:</b> APIHA81-258	
<u>% Asbestos</u>	<u>Type</u>
Sample Not Analyzed	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed	
	<u>% Non-Fibrous Material</u>

<b>Lab No.:</b> 4073088	<b>Description / Location:</b> Sample Not Analyzed
<b>Client No.:</b> APIHA81-259	
<u>% Asbestos</u>	<u>Type</u>
Sample Not Analyzed	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
Sample Not Analyzed	
	<u>% Non-Fibrous Material</u>

<b>Lab No.:</b> 4073089	<b>Description / Location:</b> Off-White Caulk
<b>Client No.:</b> APIHA82-260	Exterior Door, W
<u>% Asbestos</u>	<u>Type</u>
PC 3.1	Chrysotile
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Fibrous Material</u>
	PC 96.9

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

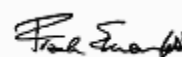
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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Approved By:**



**Date:** 9/2/2010

Frank E. Ehrenfeld, III  
Laboratory Director



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

**Lab No.:** 4073090 **Description / Location:** Sample Not Analyzed  
**Client No.:** APIHA82-261

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**Lab No.:** 4073091 **Description / Location:** Sample Not Analyzed  
**Client No.:** APIHA82-262

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

**Lab No.:** 4073092 **Description / Location:** Lt. Tan Glazing  
**Client No.:** APIHA83-263 Interior Window, W

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**Lab No.:** 4073093 **Description / Location:** Lt. Tan Glazing  
**Client No.:** APIHA83-264 Interior Window, N

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073094	<b>Description / Location:</b>	Lt. Tan Glazing	
<b>Client No.:</b>	APIHA83-265		Interior Window, S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	4073095	<b>Description / Location:</b>	Black/White Shingle	
<b>Client No.:</b>	APIHA84-266		Roof Field, S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4073095	<b>Description / Location:</b>	Black/Green Shingle	<b>Layer No.:</b> 2
<b>Client No.:</b>	APIHA84-266		Roof Field, S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4073095	<b>Description / Location:</b>	Black Felt	<b>Layer No.:</b> 3
<b>Client No.:</b>	APIHA84-266		Roof Field, S	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Cellulose	10

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073096	<b>Description / Location:</b>	Black/Green Shingle	
<b>Client No.:</b>	APIHA84-267		Roof Field, SE	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4073096	<b>Description / Location:</b>	Black/White Shingle	<b>Layer No.:</b> 2
<b>Client No.:</b>	APIHA84-267		Roof Field, SE	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4073097	<b>Description / Location:</b>	Black/Green Shingle	
<b>Client No.:</b>	APIHA84-268		Roof Field, SW	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

<b>Lab No.:</b>	4073097	<b>Description / Location:</b>	Black/White Shingle	<b>Layer No.:</b> 2
<b>Client No.:</b>	APIHA84-268		Roof Field, SW	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	15	Cellulose	85

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073098	<b>Description / Location:</b>	Black Roof Material	
<b>Client No.:</b>	AP2HA85-269		Roof Field, N. Central	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 5.3	Chrysotile	None Detected	None Detected	PC 94.7

<b>Lab No.:</b>	4073098	<b>Description / Location:</b>	Black/Green Shingle	<b>Layer No.:</b>	2
<b>Client No.:</b>	AP2HA85-269		Roof Field, N. Central		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	20	Cellulose	80	

<b>Lab No.:</b>	4073098	<b>Description / Location:</b>	Black/Grey Shingle	<b>Layer No.:</b>	3
<b>Client No.:</b>	AP2HA85-269		Roof Field, N. Central		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	20	Cellulose	80	

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

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**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



9000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Toll Free 877-428-4285  
Local: 856-231-9449  
Fax: 856-231-9818

## CERTIFICATE OF ANALYSIS

**Client:** Environ. Design International  
33 W Monroe, Suite 1825  
Chicago IL 60603

**Report Date:** 9/16/2010  
**Project:** Eagle Zinc Bldg. P1 & P2  
**Project No.:** 1515-017-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	4073099	<b>Description / Location:</b>	Black/Green Shingle
<b>Client No.:</b>	AP2HA85-270		Roof Field, NE
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	20	Cellulose

<b>Lab No.:</b>	4073099	<b>Description / Location:</b>	Black/Grey Shingle	<b>Layer No.:</b>	2
<b>Client No.:</b>	AP2HA85-270		Roof Field, NE		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	20	Cellulose	80	

<b>Lab No.:</b>	4073100	<b>Description / Location:</b>	Black/Green Shingle
<b>Client No.:</b>	AP2HA85-271		Roof Field, NW
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	20	Cellulose

**NIST-NVLAP No. 101165-0**

**NY-DOH No. 11021**

**AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

**Comments:** (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Quantification at <0.25% by volume is possible with this method. (PC-Trace) represents this limit of quantitation. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix.

**Analysis Performed By:** E. Smith

**Date:** 9/2/2010



Environmental Design  
International Inc.

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. Monroe St. Suite 1800  
Chicago, Illinois 60604  
phone 312.346.3400 fax 312.346.3409  
312.346.3409 312.346.3409

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1 Sender's Name/Project No. 2000-001/1515-017-03		2 Sampling Site Address/Contact Telephone No. Eagle Zinc Bldg B										Indicate Analysis Requested					
3 Sampled by (Signature) [Signature]		4 # of Samples in Shipment 18		5 Date of Sample Shipment 3/5/10					6 Date Results Needed 5 day turn								
Item No	Sample Number	Sample Location/Description	COMP	Matrix						Method Preserved				VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
				WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE				
1	101	101 S well	X														PLN7
2	102	102 E well															
3	103	103 S well															
4	104	104 S well															
5	105	105 N well															
6	106	106 E well															
7	107	107 S well															
8	108	108 S well															
9	109	109 N well															
10	110	110 S well															
Time In:		Time Out:		Total Hours:		Signature:										Print Name:	
Released by (Signature) [Signature]		Date/Time Released 3/24/10 1200		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted					
Comments: [Signature]		[Signature]		[Signature]		[Signature]		[Signature]		[Signature]		[Signature]					



Environmental Design  
International Inc.

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

200 S. Michigan Ave., Suite 700  
Chicago, Illinois 60604  
phone: 312.356.5400  
fax: 312.356.5499

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. E. L. L. L. / 15157-01703		2. Sampling Site Address/Contact Telephone No. Scale Zone Building B		Indicate Analysis Requested																		
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 18		5. Date of Sample Shipment 5/24/10																		
6. Date Results Needed 5/24/10		7. Date Results Needed 5/24/10		8. Date Results Needed 5/24/10																		
Item No	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO3	H2SO4	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	101	Scale Zone Building B															5/24/10	1330			1	WLM
2	102	Scale Zone Building B																				
3	103	Scale Zone Building B																				
4	104	Scale Zone Building B																				
5	105	Scale Zone Building B																				
6	106	Scale Zone Building B																				
7	107	Scale Zone Building B																				
8	108	Scale Zone Building B																				
9	109	Scale Zone Building B																				
10	110	Scale Zone Building B																				

Time In:		Time Out:		Total Hours:		Signature:		Print Name:	
Released by (Signature)	Date/Time Released	Delivery Method	Released by (Signature)	Date/Time Released	Company/Agency Affiliation	Condition Noted			
[Signature]	5/24/10 1700	Free Express	[Signature]						



# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. Monroe St. #1825

200 S. Michigan Ave. Suite 700

Chicago, Illinois 60604

phone: 312.356.5400

fax: 312.356.5499

Offices also in:

Columbus, Ohio

Clary, Indiana

Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515.0174.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building										Indicate Analysis Requested										
3. Sampled by (Signature) <i>[Signature]</i>		4. # of Samples in Shipment 29		5. Date of Sample Shipment 8/25/10					6. Date Results Needed 5 DAY TAT													
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	A-C-HA1-20	window sump water	✓											✓			8/24/10	6:00			1	PLM
2	A-C-HA1-20	water in sump	✓											✓								
3	A-C-HA1-21	water in sump	✓											✓								
4	A-C-HA1-22	window sump	✓											✓								
5	A-C-HA1-23	water in sump	✓											✓								
6	A-C-HA1-24	water in sump	✓											✓								
7	A-C-HA1-25	water in sump	✓											✓								
8	A-C-HA1-26	water in sump	✓											✓								
9	A-C-HA1-27	water in sump	✓											✓								
10	A-C-HA1-28	water in sump	✓											✓								

Time In:

Time Out:

Time In:

Time Out:

Released by (Signature)  
*[Signature]*

Date/Time Released  
8/23/10 17:00

Delivery Method  
FEDEX

Released by (Signature)

Date/Time Released

Signature:

Print Name:

Company/Agency Affiliation

Condition Noted

To Archive/Disposal

Comments: STOP @ 15 Positive

White - Client/Customer Copy  
Yellow - Billing Copy  
Pink - In-House File Copy



Environmental Design  
International Inc.

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

200 S. Michigan Ave., Suite 700  
Chicago, Illinois 60604  
phone: 312.356.5400  
fax: 312.356.5499

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K. Templeton / 1515.017.03		2. Sampling Site Address/Contact Telephone No. Eagle Zone Building C										Indicate Analysis Requested									
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 29		5. Date of Sample Shipment 8/25/10			6. Date Results Needed 5 DAY TAT														
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
11	A-C-HA10-29	brick furnace west	✓	✓										✓		8/23/10	1800			1	PLM
12	A-C-HA10-30	brick furnace west	✓	✓										✓							
13	A-C-HA10-31	brick furnace center	✓	✓										✓							
14	A-C-HA11-32	mortar furnace east	✓	✓										✓							
5	A-C-HA11-33	mortar furnace west	✓	✓										✓							
6	A-C-HA11-34	mortar furnace west	✓	✓										✓							
7	A-C-HA12-35	Plaster N. furnace south side	✓	✓										✓							
8	A-C-HA12-36	Plaster N. furnace S. side	✓	✓										✓							
9	A-C-HA12-37	Plaster N. furnace E. side	✓	✓										✓							
10	A-C-HA13-38	mortar N. furnace S. side	✓	✓										✓							
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) [Signature]		Date/Time Released 8/23/10		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									

Comments: STA @ 1st Point

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Date 7. 2. 2



Environmental Design  
International inc.

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

200 S. Michigan Ave., Suite 700  
Chicago, Illinois 60604  
phone: 312.356.5400  
fax: 312.356.5499

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No.		2. Sampling Site Address/Contact Telephone No.										Indicate Analysis Requested									
K. Temple / 1515.017.03		Eagle Zinc Building C										<div>W&amp;M</div>									
3. Sampled by (Signature) <i>Josephine</i>		5. Date of Sample Shipment 8/25/10																			
4. # of Samples in Shipment 29		6. Date Results Needed 5 DAY TAR																			
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	A-C-HA13-39	mortar N furnace west side	✓											✓			8/23/10 16:00			1	
2	A-C-HA13-40	mortar N furnace west side	✓											✓							
3	A-C-HA14-41	brick N furnace west side	✓											✓							
4	A-C-HA14-42	brick N furnace S. side	✓											✓							
5	A-C-HA14-43	brick N furnace N. side	✓											✓							
6	A-C-HA15-44	insulation green E furnace	✓											✓							
7	A-C-HA15-45	" " W furnace	✓											✓							
8	A-C-HA15-46	" " W furnace	✓											✓							
9	A-C-HA16-47	pipe sealant	✓											✓							
10																					
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) <i>Josephine</i>		Date/Time Released 8/23/10 17:00		Delivery Method Fax		Released by (Signature)										Date/Time Released		Company/Agency Affiliation		Condition Noted	

Comments:

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Environmental Design  
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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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phone: 312.356.5400  
fax: 312.356.5499

Offices also in:  
Columbus, Ohio  
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Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K. Temple/S15.017.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building D										Indicate Analysis Requested										
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 40		5. Date of Sample Shipment 8/25/10					6. Date Results Needed 8/25/10					Indicate Analysis Requested								
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	A-D2-HAZ2	metals - D 12	✓	✓										✓			8/24/10	10:00			1	FLM
2	A-D2-HAZ2	metals - D3	✓	✓										✓								
3	A-D2-HAZ2	metals - D4	✓	✓										✓								
4	A-D2-HAZ2	metals - D2	✓	✓										✓								
5	A-D2-HAZ2	metals - D3	✓	✓										✓								
6	A-D2-HAZ2	metals - D4	✓	✓										✓								
7	A-D1-HAZ2	metals - Dilution	✓	✓										✓			8/24/10	11:00				
8	A-D1-HAZ2	metals - Dilution	✓	✓										✓								
9	A-D1-HAZ2	metals - Dilution	✓	✓										✓								
10	A-D1-HAZ2	metals - Dilution	✓	✓										✓								
Time In:		Time Out:		Total Hours:		Signature:										Print Name:						
Released by (Signature) [Signature]		Date/Time Released 8/24/10 1700		Delivery Method FedEx		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted										

Comments: [Signature]

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Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K. Temple/1505.07.03		2. Sampling Site Address/Contact Telephone No. Eagle 2mc Building										Indicate Analysis Requested											
3. Sampled by (Signature) Joe Agudo		4. # of Samples in Shipment 40		5. Date of Sample Shipment 8/25/10					6. Date Results Needed 5 days turn					Laboratory Number									
Item No.	Sample Number	Sample Location/Description		COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>			ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers
1	A-DI-HAZ-70	roof top DI tap		✓														8/24/10	11:00			1	X
2	A-DI-HAZ-71	↓ ↓ ↓ ↓ ↓		✓														8/24/10	11:00			1	1
3	A-DI-HAZ-72	filtering sock		✓														8/24/10	11:00			1	1
4	A-DI-HAZ-73	filtering sock		✓														8/24/10	11:00			1	1
5	A-DI-HAZ-74	filtering sock		✓														8/24/10	11:00			1	1
6	A-DI-HAZ-75	plastic DI		✓														8/24/10	11:00			1	1
7	A-DI-HAZ-76	↓ ↓ ↓ ↓ ↓		✓														8/24/10	11:00			1	1
8	A-DI-HAZ-77	↓ ↓ ↓ ↓ ↓		✓														8/24/10	11:00			1	1
9	A-DI-HAZ-78	analyzing DI		✓														8/24/10	11:00			1	1
10	A-DI-HAZ-79	↓ ↓ ↓ ↓ ↓		✓														8/24/10	11:00			1	1
Time In:		Time Out:		Total Hours:		Signature:										Print Name:							
Released by (Signature)		Date/Time Released		Delivery Method		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted											
Joe Agudo		8/24/10 17:00		1 sample - Fresh DI																			

Comments: 1st press

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Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No.		2. Sampling Site Address/Contact Telephone No.										Indicate Analysis Requested											
3. Sampled by (Signature)		4. # of Samples in Shipment		5. Date of Sample Shipment					6. Date Results Needed														
Item No.	Sample Number	Sample Location/Description		COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
Time In:		Time Out:		Total Hours:		Signature:										Print Name:							
Released by (Signature)		Date/Time Released		Delivery Method		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted											
Comments:		To Archive/Disposal																					



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CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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phone: 312.366.5400 341 1400  
fax: 312.366.5400 341 0324

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515.017.03		2. Sampling Site Address/Contact Telephone No. EAGLE ZIRK										Indicate Analysis Requested									
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 3		5. Date of Sample Shipment 5 DAY TAT								6. Date Results Needed									
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	AD11A65207	FRANCIS DUNE / GASKET	✓														8/21/10	10:00		1	✓
2	AD11A65208	FRANCIS DUNE / GASKET	✓														8/21/10			1	✓
3	AD11A65209	FRANCIS DUNE / GASKET	✓														8/21/10			1	✓
4	I.A.																				
5																					
6																					
7																					
8																					
9																					
10																					
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) [Signature]		Date/Time Released 8/21/10 12:00		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									

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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. Monroe St. Suite 1820  
200 S. Michigan Ave. Suite 700  
Chicago, Illinois 60604

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin  
phone: 312.356.5400 312.356.1400  
fax: 312.356.5446 312.356.1429

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K. Thompson / 1515-03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building H										Indicate Analysis Requested									
3. Sampled by (Signature) <i>[Signature]</i>		4. # of Samples in Shipment 8/25/10		5. Date of Sample Shipment 8/25/10										6. Date Results Needed 8/25/10							
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	A-H-HA 31/43	working site H	✓	✓													8/24/10			1	X
2	A-H-HA 31/43	↓	✓	✓													8/24/10			1	↓
3	A-H-HA 31/43	↓	✓	✓													8/24/10			1	↓
4	A-H-HA 31/43	working site H	✓	✓													8/24/10			1	↓
5	A-H-HA 31/43	↓	✓	✓													8/24/10			1	↓
6	A-H-HA 31/43	↓	✓	✓													8/24/10			1	↓
7																					
8																					
9																					
10																					
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) <i>[Signature]</i>		Date/Time Released 8/24/10 1700		Delivery Method Fed Ex		Released by (Signature)										Date/Time Released		Company/Agency Affiliation		Condition Noted	
Comments:																					
To Archive/Disposal																					



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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. MONTGOMERY ST. 1825  
200 S. MICHIGAN AVE. SUITE 700  
CHICAGO, ILLINOIS 60603

phone: 312.356.5400 343-1466

fax: 312.356.5409 343-0529

Offices also in:

Columbus, Ohio

Gary, Indiana

Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1511 01703		2. Sampling Site Address/Contact Telephone No. EAGLE ZINE GOLDEN VA										Indicate Analysis Requested								
3. Sampled by (Signature) Don Agalar		4. # of Samples in Shipment 6		5. Date of Sample Shipment 8/26/10					6. Date Results Needed 5 DAY TAT											
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	Matrix			Method Preserved			Sampling		VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number				
					WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time			
1	1511-01703-1	10' pipe penetration		✓													8/26/10	0930	1	
2	1511-01703-2	10' pipe penetration																		
3	1511-01703-3	10' pipe penetration																		
4	1511-01703-4	10' pipe penetration																		
5	1511-01703-5	10' pipe penetration																		
6	1511-01703-6	10' pipe penetration																		
7	1511-01703-7	10' pipe penetration																		
8	1511-01703-8	10' pipe penetration																		
9	1511-01703-9	10' pipe penetration																		
10	1511-01703-10	10' pipe penetration																		
Time In:		Time Out:		Total Hours:		Signature:										Print Name:				
Released by (Signature) Don Agalar		Date/Time Released 8/26/10 1700		Delivery Method Fax		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted								

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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. MARIAGE STE 1825  
200 S. Michigan Ave Suite 700  
Chicago, Illinois 60603  
phone: 312.336.5444 345.8420  
fax: 312.336.5449 345.0529

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515 617.03		2. Sampling Site Address/Contact Telephone No. Eagle Zine Building 112 + 43										Indicate Analysis Requested										
3. Sampled by (Signature) Jon Agula		4. # of Samples in Shipment 10		5. Date of Sample Shipment 8/26/10										6. Date Results Needed 5 DAY TAT								
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	44336-10	110 fire insulation	✓														8/27/10	0945			1	10
2	44336-11	↓																				
3	44336-12	113 window glazing																				
4	↓																					
5	↓																					
6	44336-13	↓																				
7	↓																					
8																						
9																						
10																						

Time In:	Time Out:	Total Hours:	Signature:			Print Name:		
Released by (Signature) Jon Agula	Date/Time Released 8/26/10 1700	Delivery Method FEDEX	Released by (Signature)	Date/Time Released	Company/Agency Affiliation	Condition Noted		

Comments: See Appendix

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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. Montrose St. 1825

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Chicago, Illinois 60604

phone: 312.356.5400

fax: 312.356.5499

Offices also in:

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Cary, Indiana

Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K. Thompson 1575.017.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building J										Indicate Analysis Requested									
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 4		5. Date of Sample Shipment 9/25/10				6. Date Results Needed 9/25/10				TIME (Minutes)		# of Containers		Laboratory Number					
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)			
1	A-5-11A29	insulation - T furnace	✓														8/24/10				
2	A-5-11A29	insulation - D5 furnace	✓																		
3	A-5-11A29	insulation - T furnace	✓																		
4	A-5-11A29	insulation - T furnace	✓																		
5																					
6																					
7																					
8																					
9																					
10																					
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature)		Date/Time Released		Delivery Method		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									
[Signature]		8/24/10 1200		Fax Ex		[Signature]		8/24/10 1200		[Signature]		[Signature]									

Comments: See @ 1st Furnace

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CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

33 W. Mendota Ave. Ste 1800  
Chicago, Illinois 60603  
phone: 312.356.5499 fax: 312.356.5499  
345-0529

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515 017.03		2. Sampling Site Address/Contact Telephone No. 204 S. Michigan Ave. Suite 700										Indicate Analysis Requested									
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 5		5. Date of Sample Shipment 5 DAY TAT										6. Date Results Needed							
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	AK14A3298	Swamp / River / Marsh	✓														8/24/95			1	✓
2	AK14A3299	Swamp / River / Marsh	✓																	1	✓
3	AK14A32100	Swamp / River / Marsh	✓																	1	✓
4	AK14A32101	Swamp / River / Marsh	✓																	1	✓
5	AK14A33102	Swamp / River	✓														9:00			1	✓
6	AK14A33103	Swamp / River / Back	✓																	1	✓
7	AK14A33104	Swamp / River / Back	✓																	1	✓
8	AK14A34105	Swamp / Marsh	✓														9:00			1	✓
9	AK14A34106	Swamp / Marsh	✓																	1	✓
10	AK14A34107	Swamp / Marsh	✓																	1	✓
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) [Signature]		Date/Time Released 8/24/95		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									

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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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OFFICES ALSO IN:  
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GARY, INDIANA  
MILWAUKEE, WISCONSIN

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515-017-03		2. Sampling Site Address/Contact Telephone No. EAGLE 2. NC 0101011		Indicate Analysis Requested													
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 34		6. Date Results Needed 5 DAY													
Item No.	Sample Number	Sample Location/Description	COMP	Matrix						VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number				
				GRAB	WATER	SOIL	AIR	SLUDGE	OTHER					HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE
1	ALUMINUM 104	ALUMINUM 104	✓											8/10/10	1035	1	
2	-105	EXHAUST W															
3	-106																
4	ALUMINUM 107	ALUMINUM 107															
5	-108																
6	-109																
7	ALUMINUM 110	ALUMINUM 110															
8	-111																
9	-112																
10	ALUMINUM 113	ALUMINUM 113															

Time In:		Time Out:		Total Hours:		Signature:		Print Name:	
Released by (Signature) [Signature]	Date/Time Released 8/10/10 1700	Delivery Method TRUCK	Released by (Signature)	Date/Time Released	Company/Agency Affiliation	Condition Noted			



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Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K... ..		2. Sampling Site Address/Contact Telephone No. Eagle Zone Building L1		Indicate Analysis Requested	
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 34		5. Date of Sample Shipment 8/26/10	
6. Date Results Needed 5 days TAT		7. Method Preserved		8. Date	
9. Matrix		10. Sampling		11. TIME (Minutes)	
12. Sample Location/Description		13. VOLUME (L)		14. Laboratory Number	
15. Sample Number		16. COMP		17. # of Containers	
18. Sample Location/Description		19. GRAB		20. TIME (Minutes)	
1. 11143- [Signature]		X		1. 1045	
2. 11144- [Signature]		X		2. 1046	
3. 11145- [Signature]		X		3. 1047	
4. 11146- [Signature]		X		4. 1048	
5. 11147- [Signature]		X		5. 1049	
6. 11148- [Signature]		X		6. 1050	
7. 11149- [Signature]		X		7. 1051	
8. 11150- [Signature]		X		8. 1052	
9. 11151- [Signature]		X		9. 1053	
10. 11152- [Signature]		X		10. 1054	

Time In:		Time Out:		Total Hours:		Signature:		Print Name:	
Released by (Signature) [Signature]		Date/Time Released 8/26/10 1:00 PM		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released	
To Archive/Disposal		To Archive/Disposal		To Archive/Disposal		To Archive/Disposal		To Archive/Disposal	



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International inc.

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

200 S. Michigan Ave., Suite 700  
Chicago, Illinois 60604  
phone: 312.356.5400  
fax: 312.356.5499

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K-Tempco / 1515.07.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building L1										Indicate Analysis Requested								
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 34		5. Date of Sample Shipment 8/26/10				6. Date Results Needed 5 day TAT												
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	Matrix				Method Preserved				TIME (Minutes)	# of Containers	Laboratory Number					
					WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	Date	Time	VOLUME (L)			
1	4214446-144	Pilester - Leased roadway		X												8/25/10	1058			
2	4214447-145	Pilester (2) N well brick behind															1100			
3	-146																			
4	-147																			
5	4214448-148	Pilester side bottom															1105			
6	-149																			
7	-150																			
8	4214449-151	top																		
9	4214450-152	N pile bottom															1105			
10	-153																			

Time In:		Time Out:		Total Hours:		Signature:		Print Name:	
Released by (Signature) [Signature]	Date/Time Released 8/26/10 1600	Delivery Method FedEx	Released by (Signature)	Date/Time Released				Company/Agency Affiliation	Condition Noted



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1. Sender's Name/Project No. K-20000 / 1515-017-03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building L1										Indicate Analysis Requested					
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 34		5. Date of Sample Shipment 8/26/16		6. Date Results Needed 5 day + 4+											
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	Matrix	Method Preserved				Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number		
1	AL3H448 -154	Rock N side top	X														
2	-155	rock															
3	-156	rock															
4	-157	rock															
5																	
6																	
7																	
8																	
9																	
10																	
Time In:		Time Out:		Total Hours:		Signature:										Print Name:	
Released by (Signature) [Signature]		Date/Time Released 8/26/16 1400		Delivery Method Fedex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted					

Comments: stop to put positive

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1. Sender's Name/Project No.		2. Sampling Site Address/Contact Telephone No.		Indicate Analysis Requested																		
3. Sampled by (Signature)		4. # of Samples in Shipment		5. Date of Sample Shipment		6. Date Results Needed																
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	Sample 1	Refinery West	X														8/26/10	1100				PLM
2	↓	NW																				
3	↓	South																				
4	Sample 4	Reef Gold west																				
5	↓	NW																				
6	↓	South																				
7	Sample 7	Refinery west																				
8	↓	NW																				
9	↓	South																				
10	Sample 10	Thompson office west																				
Time In:			Time Out:			Total Hours:			Signature:			Print Name:										
Released by (Signature)			Date/Time Released			Delivery Method			Released by (Signature)			Date/Time Released			Company/Agency Affiliation			Condition Noted				
Sample 10			8/26/10 14:00			FedEx																

Comments: Step 10 Positive

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Page 1 of 1



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1. Sender's Name/Project No. 1515-017-03						2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building M						Indicate Analysis Requested  							
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 47		5. Date of Sample Shipment 8/26/10		6. Date Results Needed 5 day TAT													
Item No.	Sample Number	Sample Location/Description				COMP	GRAB	Matrix WATER SOIL AIR SLUDGE OTHER				Method Preserved HCl HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> ICE NONE OTHER		Sampling Date Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	AMH469-208	thermal system garage office air rel. south				X													P.L.M.
2	-208	garage office NW																	
3	AMH470-203	turnstile Break room																	
4	-203	lunch room																	
5	-204	locker room																	
6	AMH470-205	entrance locker room																	
7	AMH471-206	Trainer on support beam break room																	
8	-207	lunch room																	
9	-208	locker room																	
10	AMH472-209	Physical Locker Room E wing																	
Time In:		Time Out:				Total Hours:		Signature:						Print Name:					
Released by (Signature) [Signature]		Date/Time Released 8/26/10 14:30		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation				Condition Noted					

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Due



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Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515.017.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building M										Indicate Analysis Requested										
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 47		5. Date of Sample Shipment 8/26/10					6. Date Results Needed 5 day TAR													
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	AMHA72-230	Drywall Locker room S. wall	X														8/26/10	1100			1	PLM
2	↓ -231	Locker room E. wall																				
3	AMHA73-232	Drywall joint Locker room compound E. wall																				
4	↓ -233	↓																				
5	↓ -234	Locker room S. wall																				
6	AMHA74-235	2'x4' ceiling central office f.i.r. to break RM N																				
7	↓ -236	Setio																				
8	↓ -237	↓																				
9	AMHA75-238	2'x4' ceiling tile perforated																				
10	↓ -239	↓ center																				
Time In:		Time Out:		Total Hours:				Signature:										Print Name:				
Released by (Signature) [Signature]		Date/Time Released 8/26/10 14:30		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted										

Comments: stop @ 1st positive

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Runout Number

Don 2nd



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[illegible]

Comments: Stop @ positive.

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Plant Number:

1. *Chlorophyll a* (Chl a) is the primary photosynthetic pigment in most plants and algae. It is a green pigment that absorbs light energy in the blue and red regions of the visible spectrum. Chl a is located in the thylakoid membranes of chloroplasts.



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1. Sender's Name/Project No.		2. Sampling Site Address/Contact Telephone No.		3. Sampled by (Signature)		4. # of Samples in Shipment		5. Date of Sample Shipment		6. Date Results Needed		Indicate Analysis Requested							
Sample Number		Sample Location/Description		COMP		Matrix		Method Preserved		Sampling		VOLUME (L)		TIME (Minutes)		# of Containers		Laboratory Number	
Item No.		Sample Location/Description		COMP		Matrix		Method Preserved		Sampling		VOLUME (L)		TIME (Minutes)		# of Containers		Laboratory Number	
1	AMM477-050	exterior window	S	X															
2	050	exterior window	S																
3	050	exterior window	S																
4	AMM480-053	exterior window	E																
5	054	exterior window	NE																
6	055	exterior window	W																
7	AMM480-056	exterior window	W																
8																			
9																			
10																			

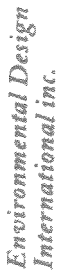
Time In:		Time Out:		Total Hours:		Signature:		Print Name:					
Released by (Signature)		Date/Time Released		Delivery Method		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted	
See file 104		8/26/10 14:30		Fed Ex									

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Page 5 of 5



30. Nov 30 1911

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Comments: 5-10-2018



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Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No.		2. Sampling Site Address/Contact Telephone No.										Indicate Analysis Requested	
3. Sampled by (Signature)		4. # of Samples in Shipment		5. Date of Sample Shipment				6. Date Results Needed					
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	Matrix	Method Preserved	DATE	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	ANHAS3-160	10' x 10' ceiling tile central office											
2	↓ -169	NW office											
3	ANHAS3-170	10' x 10' grey floor tile NE											
4	↓ -171	central office SE											
5	↓ -172	central office SW											
6	ANHAS4-173	10' x 10' ceiling tile SE office											
7	↓ -174	central office											
8	↓ -175												
9	ANHAS5-176	tearout ceiling panel center mech. room											
10	↓ -177												
Time In:		Time Out:		Total Hours:		Signature:		Print Name:					
Released by (Signature)		Date/Time Released		Delivery Method		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted	
Tox Analyst		8/26/10		Fro 20									

Comments: 5/10/10 @ 1:00 PM - 1:00 PM

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fax: 312.356.5499 345-0339

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[illegible]

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Chicago, Illinois 60603  
phone: 312.356-5499 fax: 312.356-5499  
312.356-5499 312.356-5499

Offices also in:  
Columbus, Ohio  
Gary, Indiana  
Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515 017.03		2. Sampling Site Address/Contact Telephone No. EAGLE 2, AC 2, 11111111		Indicate Analysis Requested																		
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 32		6. Date Results Needed 5 DAY TAT																		
Item No	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Sampling Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
1	AD-188	3. sandas gborang	✓														8/26/10	1030			1	
2	1-11	W. ↓																				
3	1-17	N. ↓																				
4	AD-189	E. Road marking																				
5	1-109	N. ↓																				
6	1-190	S. ↓																				
7	AD-180	E. Road flashing																				
8	1-10	N. ↓																				
9	1-193	S. ↓																				
10	AD-04405-194	S. Road flashing																				
Time In:		Time Out:		Total Hours:		Signature:		Print Name:														
Released by (Signature) [Signature]		Date/Time Released 8/26/10 1700		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted										



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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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Chicago, Illinois 60603

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fax: 312.356.5499 345-0129

Offices also in:

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Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515 01703		2. Sampling Site Address/Contact Telephone No. EAGLE ZINC Co. Mine										Indicate Analysis Requested									
3. Sampled by (Signature) Don Aguilera		4. # of Samples in Shipment 22		5. Date of Sample Shipment 8/26/10					6. Date Results Needed 5 DAY TAT												
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	ACHAG-115	E. Asphlt sample	✓														8/26/10 1630				
2	-116	N. ↓																			
3	-117	S. ↓																			
4	ACHAG-118	E. Asphlt sample																			
5	-119	N. ↓																			
6	-120	S. ↓																			
7	ACHAG-121	E. exterior paved curb																			
8	-122	E. ↓																			
9	-123	N. ↓																			
10	ACHAG-124	E. exterior paved curb																			
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) Don Aguilera		Date/Time Released 8/26/10 1700		Delivery Method Fed ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									



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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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Milwaukee, Wisconsin  
phone: 312.356.5499 312.356.5499  
fax: 312.356.5499 312.356.5499

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. 1515 017.03		2. Sampling Site Address/Contact Telephone No. EAGLE ZINC BUILDING D										Indicate Analysis Requested									
3. Sampled by (Signature) Tom Agate		4. # of Samples in Shipment 22		5. Date of Sample Shipment 8/26/10			6. Date Results Needed 5 DAY TAT														
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	NONE	OTHER	Date	Time	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number
1	AS244-205	E. exterior door creek	✓	✓												8/26/10	1630		1	1	
2	206																		1	1	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
Time In:		Time Out:		Total Hours:		Signature:										Print Name:					
Released by (Signature) Tom Agate		Date/Time Released 8/26/10 1700		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted									

Comments: 5:00 @ 1st Pass 17:00

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Milwaukee, Wisconsin

Custody and Sample Information - Complete ALL information. Put N/A in blanks not applicable. Press firmly.

1. Sender's Name/Project No. K Temp/1515.017.03		2. Sampling Site Address/Contact Telephone No. Eagle Zinc Building P1 + P2										Indicate Analysis Requested						
3. Sampled by (Signature) [Signature]		4. # of Samples in Shipment 15		5. Date of Sample Shipment 8/26/10										6. Date Results Needed 5 day TAT				
Item No.	Sample Number	Sample Location/Description	COMP	GRAB	Matrix				Method Preserved				SAMPLING	VOLUME (L)	TIME (Minutes)	# of Containers	Laboratory Number	
					WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>						ICE
1	AP11A84-267	Asphalt Road	X															
2	↓ -368	SW - SF - RT																
3	AP21A85-269	Road Field N. central																
4	↓ -270	NE																
5	↓ -271	HL																
6																		
7																		
8																		
9																		
10																		
Time In:		Time Out:		Total Hours:		Signature:										Print Name:		
Released by (Signature) [Signature]		Date/Time Released 8/26/10 14:30		Delivery Method Fed Ex		Released by (Signature)		Date/Time Released		Company/Agency Affiliation		Condition Noted						

Comments: Stop @ 1st positive

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ASBESTOS TESTING LABORATORIES: Current NVLAP Certifications for PLM and TEM

United States Department of Commerce  
National Institute of Standards and Technology

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*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2009-07-01 through 2010-06-30  
Effective dates



*Sally S. Bruce*  
For the National Institute of Standards and Technology

NVLAP 5.0.010 (REV. 2/00) 01-281

United States Department of Commerce  
National Institute of Standards and Technology

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This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2009-07-01 through 2010-06-30  
Effective dates



*Sally S. Bruce*  
For the National Institute of Standards and Technology

NVLAP 5.0.010 (REV. 2/00) 01-281



## **Appendix D: LBP Sample Log Sheets**





LEAD SAMPLE LOG – Building A						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	support beam	grey	XRF-A-HA5-01	SE beam	1.51	+
metal	support beam	grey	XRF-A-HA5-02	S. central beam	>5.0	+
metal	support beam	grey	XRF-A-HA5-03	N. central beam	1.80	+
wood	door frame	grey	XRF-A-HA6-04	S. wall west side frame	4.47	+
wood	door frame	grey	XRF-A-HA6-05	S. wall east side frame	3.34	+
wood	door frame	grey	XRF-A-HA6-06	S. wall top of frame	0.07	-

LEAD SAMPLE LOG – Building B						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	wall joist	bare	XRF-B-HA1-01	hallway N. wall	2.27	+
wood	wall joist	bare	XRF-B-HA1-02	hallway S. wall	4.76	+
wood	wall joist	bare	XRF-B-HA1-03	hallway ceiling joist	0.90	-
painted concrete	wall	red	XRF-B-HA2-04	west wall	1.00	+
painted wood	door frame	red	XRF-B-HA3-05	S. on door frame entering building A, W. side	2.42	+
painted wood	door frame	red	XRF-B-HA3-06	N. on door frame entering building A, W. side	0.02	-
painted wood	door frame	red	XRF-B-HA3-07	N. wall frame, W. side of frame	0.30	-
corrugated metal	exterior wall	grey	XRF-B-HA4-08	E. exterior	0.20	-
corrugated metal	exterior wall	grey	XRF-B-HA4-09	N. exterior	2.95	+
corrugated metal	exterior wall	grey	XRF-B-HA4-10	S. exterior	0.13	-



LEAD SAMPLE LOG – Building C						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
Cinder Block	wall	grey	XRF-C-HA7-01	S. wall front office area	4.52	+
Cinder Block	wall	grey	XRF-C-HA7-02	W. wall front office area	3.59	+
Cinder Block	wall	grey	XRF-C-HA7-03	N. wall front office area	3.56	+
Particle board wood	wall	white	XRF-C-HA8-04	S. wall center, office with sink	0.00	-
Particle board wood	wall	white	XRF-C-HA8-05	S. wall east, office with sink	0.00	-
Particle board wood	wall	white	XRF-C-HA8-06	S. wall west, office with sink	0.00	-
wood	ceiling	white	XRF-C-HA9-07	NE corner of office with sink	0.13	-
wood	ceiling	white	XRF-C-HA9-08	SW corner of office with sink	0.27	-
wood	ceiling	white	XRF-C-HA9-09	front office area	0.02	-
wood	window frame	pink	XRF-C-HA10-10	front office E. window	0.03	-
wood	window frame	pink	XRF-C-HA10-11	wall around window frame, front office	0.02	-
wood	window frame	pink	XRF-C-HA10-12	wall around window frame, front office	0.10	-
metal	wall	yellow	XRF-C-HA11-13	N. wall E. side of wall N. of main office	0.00	-
metal	door frame	yellow	XRF-C-HA11-14	Door frame from main office	0.05	-
metal	wall	yellow	XRF-C-HA11-15	E. wall outside of main office	0.00	-



LEAD SAMPLE LOG – Building C						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	wall beam	red	XRF-C-HA12-16	S. wall E. beam	0.11	-
metal	wall beam	red	XRF-C-HA12-17	S. wall W. beam	0.06	-
metal	wall beam	red	XRF-C-HA12-18	N. wall mid room corner beam	0.09	-
metal	outer skirt of kiln	blue	XRF-C-HA13-19	central kiln, S. side	0.00	-
metal	thermostat panel	blue	XRF-C-HA13-20	S. side of panel near kiln	0.00	-
metal	kiln	blue	XRF-C-HA13-21	N. kiln E. side	0.04	-
metal	hopper	green	XRF-C-HA14-22	N. side of hopper, east room	0.00	-
metal	electrical panel	green	XRF-C-HA14-23	N. side E. room electrical panel near hopper	0.00	-
metal	hopper riser	green	XRF-C-HA14-24	E. room, E. side of hopper riser	0.00	-
metal	exterior corrugated	beige	XRF-C-HA15-25	E. exterior	0.00	-
metal	exterior corrugated	beige	XRF-C-HA15-26	N. exterior	0.00	-
metal	exterior corrugated	beige	XRF-C-HA15-27	N. exterior	0.01	-
metal	exterior doors	white	XRF-C-HA16-28	N. exterior east panel	0.00	-
metal	exterior doors	white	XRF-C-HA16-29	W. exterior	0.00	-
metal	exterior doors	white	XRF-C-HA16-30	N. exterior W. panel	0.00	-

Paint Chip sample was collected from HA11 (sample PC-C-HA11-01) laboratory result was 14 mg/kg lead, confirms XRF result as non-LBP.



LEAD SAMPLE LOG – Building D1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door	grey	XRF-D1-HA17-01	N. door entrance	>5.0	+
wood	door	grey	XRF-D1-HA17-02	top of door frame, N. entrance	4.29	+
wood	door	grey	XRF-D1-HA17-03	N. door entrance	>5.0	+
concrete	door casing	white	XRF-D1-HA18-04	N. side E. door casing off of N. entrance	0.00	-
concrete	door casing	white	XRF-D1-HA18-05	top of E. door casing off of N. entrance	0.60	-
concrete	door casing	white	XRF-D1-HA18-06	S. side E. door casing off of N. entrance	1.00	+
metal	hopper	white	XRF-D1-HA19-07	ground floor	0.25	-
metal	hopper	white w/ grey under	XRF-D1-HA19-08	ground floor	2.48	+
metal	hopper	white w/ grey under	XRF-D1-HA19-09	ground floor	1.65	+
concrete	wall	white	XRF-D1-HA20-10	hopper room W. wall	1.00	+
concrete	wall	white	XRF-D1-HA20-11	hopper room S. wall	0.06	-
concrete	wall	white	XRF-D1-HA20-12	hopper room E. wall	0.03	-
metal	board walk	white	XRF-D1-HA21-13	bottom of board walk, S. end	>5.0	+
metal	board walk	white	XRF-D1-HA21-14	bottom of board walk, central	>5.0	+
metal	board walk	white	XRF-D1-HA21-15	bottom of board walk, N. end	1.23	+
metal	stairs	white	XRF-D1-HA22-16	stair case, N. end	4.80	+
metal	stairs	white	XRF-D1-HA22-17	stair case, central	3.51	+



LEAD SAMPLE LOG – Building D1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	stairs	white	XRF-D1-HA22-18	stair railing, central	3.22	+
wood	ceiling	white	XRF-D1-HA23-19	S. side room off of hopper room	>5.0	+
wood	wall	white	XRF-D1-HA23-20	S. side room off of hopper room	1.31	+
wood	ceiling joist	white	XRF-D1-HA23-21	S. side room off of hopper room	>5.0	+
metal	support beam	white w/ grey under	XRF-D1-HA31-22	NE beam	0.60	-
metal	support beam	white w/ grey under	XRF-D1-HA31-23	central beam	0.65	-
metal	support beam	white w/ grey under	XRF-D1-HA31-24	SW beam, central room	0.42	-
metal	machinery	blue	XRF-D1-HA32-25	conveyor control room hopper dumper	0.41	-
metal	machinery	blue	XRF-D1-HA32-26	conveyor control room hopper dumper	0.35	-
metal	machinery	blue	XRF-D1-HA32-27	feeder chute	0.00	-
metal	door	grey	XRF-D1-HA33-28	conveyor control room S. door	0.11	-
metal	wall	grey	XRF-D1-HA33-29	conveyor control room S. wall	2.84	+
metal	wall	grey	XRF-D1-HA33-30	conveyor control room W. wall	3.52	+
metal	exterior wall	grey	XRF-D1-HA34-31	SE wall	0.07	
metal	exterior wall	grey	XRF-D1-HA34-32	S. cove	4.38	+
metal	exterior wall	grey	XRF-D1-HA34-33	S. wall	1.83	+
wood	window frame	grey	XRF-D1-HA35-34	SE window, lower storage area w/ brick pilars	>5.0	+



LEAD SAMPLE LOG – Building D1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	window frame	grey	XRF-D1-HA35-35	NE window, lower storage area w/ brick pilars	>5.0	+
wood	window frame	grey	XRF-D1-HA35-36	NE window, lower storage area w/ brick pilars	>5.0	+
metal	pilar protector	yellow	XRF-D1-HA36-37	tin garage	0.00	-
metal	pilar protector	yellow	XRF-D1-HA36-38	tin garage	0.00	-
metal	guard rail	yellow	XRF-D1-HA36-39	tin garage	0.00	-
metal	support beam	red	XRF-D1-HA37-40	Center of N. wall tin garage	0.70	-
metal	support beam	red	XRF-D1-HA37-41	NW corner of tin garage	0.07	-
metal	support beam	red	XRF-D1-HA37-42	S. center of tin garage	0.00	-
metal	door frame	green	XRF-D1-HA38-43	N. lab door frame in tin garage	0.04	-
metal	door	green	XRF-D1-HA38-44	N. lab interior of door in tin garage	0.04	-
metal	door	green	XRF-D1-HA38-45	N. lab exterior of door in tin garage	0.03	-
metal	door frame	blue	XRF-D1-HA39-46	N. lab door frame in tin garage	0.04	-
metal	door	blue	XRF-D1-HA39-47	N. lab interior of door in tin garage	0.02	-
metal	door	blue	XRF-D1-HA39-48	N. lab exterior of door in tin garage	0.10	-

Paint Chip sample was collected from HA21 (sample PC-D1-HA21-01) laboratory result was 26,000 mg/kg lead, confirms XRF result as LBP.

Paint Chip sample was collected from HA31 (sample PC-D1-HA31-02) laboratory result was 4,200 mg/kg lead, confirms XRF result as non-LBP.



LEAD SAMPLE LOG – Building D2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	grey	XRF-D4-HA30-01	SW door frame	>5.0	+
wood	door frame	grey	XRF-D4-HA30-02	NE door frame	>5.0	+
wood	door frame	grey	XRF-D4-HA30-03	NE door frame	>5.0	+

LEAD SAMPLE LOG – Building D3						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	white	XRF-D4-HA28-01	SW door frame	>5.0	+
wood	door frame	white	XRF-D4-HA28-02	SW door frame	>5.0	+
wood	door frame	white	XRF-D4-HA28-03	SW door frame	>5.0	+
wood	door frame	grey	XRF-D4-HA29-04	NE door frame	>5.0	+
wood	door frame	grey	XRF-D4-HA29-05	NE door frame	>5.0	+
wood	door frame	grey	XRF-D4-HA29-06	NE door frame	>5.0	+

LEAD SAMPLE LOG – Building D4						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	grey	XRF-D4-HA27-01	W. side of frame	>5.0	+
wood	door frame	grey	XRF-D4-HA27-02	E. side of frame	3.87	+
wood	door frame	grey	XRF-D4-HA27-03	top of frame	2.24	+



LEAD SAMPLE LOG – Building D5						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	grey	XRF-D5-HA22-01	W. side of frame	>5.0	+
wood	door	grey	XRF-D5-HA22-02	door	>5.0	+
wood	door frame	grey	XRF-D5-HA22-03	top of frame	1.03	+
wood	window frame	grey w/ yellow under	XRF-D5-HA23-04	NE part of building	>4.59	+
wood	window sash	grey w/ yellow under	XRF-D5-HA23-05	NE part of building	1.90	+
wood	window frame	grey w/ yellow under	XRF-D5-HA23-06	NE part of building	2.13	+
brick	wall	dark grey w/ yellow under	XRF-D5-HA24-07	NW wall	4.08	+
brick	wall	dark grey w/ yellow under	XRF-D5-HA24-08	SW wall	>5.0	+
brick	wall	dark grey w/ yellow under	XRF-D5-HA24-09	NE wall	>5.0	+
metal	wall	grey w/ yellow under	XRF-D5-HA25-10	base for air handling unit	>5.0	+
metal	air handling unit	grey w/ yellow under	XRF-D5-HA25-11	air handling unit drum casing	>5.0	+
metal	wall	grey w/ yellow under	XRF-D5-HA25-12	corrugated E. wall	>5.0	+
metal	wall	red	XRF-D5-HA26-13	SE side of exterior fan blower unit	2.03	+
metal	wall	red	XRF-D5-HA26-14	exterior wall frame SE side	1.15	+
metal	wall	red	XRF-D5-HA26-15	SE side of exterior fan blower unit	>5.0	+



LEAD SAMPLE LOG – Building F1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	wall	grey	XRF-F1-HA57-01	N. exterior wall	0.20	-
metal	wall	grey	XRF-F1-HA57-02	W. exterior wall	0.03	-
metal	wall	grey	XRF-F1-HA57-03	S. exterior wall	0.13	-
wood	door frame	grey	XRF-F1-HA58-04	N. side door frame	0.23	-
wood	door	grey	XRF-F1-HA58-05	exterior of door	0.32	-
wood	door frame	grey	XRF-F1-HA58-06	S. side door frame	0.19	-
metal	hopper	red	XRF-F1-HA59-07	SE support beam	1.60	+
metal	hopper	red	XRF-F1-HA59-08	E. hopper	3.27	+
metal	hopper	red	XRF-F1-HA59-09	N. support beam	2.46	+

Note: standing water on the interior of building F1, no samples were tested on the interior

LEAD SAMPLE LOG – Building F2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	wall	grey	XRF-F2-HA60-01	E. exterior wall	0.06	-
metal	wall	grey	XRF-F2-HA60-02	N. exterior wall	0.04	-
metal	wall	grey	XRF-F2-HA60-03	W. exterior wall	0.09	-



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LEAD SAMPLE LOG – Building G						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	wall	white	XRF-G-HA61-01	E. wall center	0.00	-
metal	wall	white	XRF-G-HA61-02	E. wall support plate	0.00	-
metal	wall	white	XRF-G-HA61-03	E. wall S. end	0.00	-
metal	support beam	blue	XRF-G-HA62-04	W. beam	0.00	-
metal	support beam	blue	XRF-G-HA62-05	N. central beam	0.00	-
metal	support beam	blue	XRF-G-HA62-06	NE beam	0.00	-
metal	wall	yellow	XRF-G-HA63-07	NW wall	0.00	-
metal	wall	yellow	XRF-G-HA63-08	N. wall central	0.00	-
metal	wall	yellow	XRF-G-HA63-09	NE wall	0.00	-

Paint Chip sample was collected from HA61 (sample PC-G-HA61-01) laboratory result was 26,000 mg/kg lead, XRF did not indicate positive lead in paint, but paint chip confirms lead in white paint at the metal wall in Building G or lead in residue on the paint chip.



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LEAD SAMPLE LOG – Building H						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
brick	wall	white w/ blue	XRF-H-HA64-01	N. exterior wall	0.00	-
brick	wall	white w/ blue	XRF-H-HA64-02	W. exterior wall	1.00	+
brick	wall	white w/ blue	XRF-H-HA64-03	S. exterior wall	0.00	-
wood	frames	white	XRF-H-HA65-04	door frame	0.03	-
wood	frames	white	XRF-H-HA65-05	W. window frame	0.05	-
wood	frames	white	XRF-H-HA65-06	N. window frame	0.06	-



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LEAD SAMPLE LOG – Building H2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	door	white	XRF-H2-HA114-01	E. door	3.41	+
metal	window frame	white	XRF-H2-HA114-02	E. window frame	1.98	+
metal	window frame	white	XRF-H2-HA114-03	N. window frame	1.12	+
brick	wall	white	XRF-H2-HA115-04	S. on interior wall	>5.0	+
brick	wall	white	XRF-H2-HA115-05	N. on interior wall, E. side	4.67	+
brick	wall	white	XRF-H2-HA115-06	N. on interior wall, W. side	>5.0	+
wood	door	white	XRF-H2-HA116-07	E. exit S. end door	0.03	-
wood	door	white	XRF-H2-HA116-08	E. exit frame N	>5.0	+
wood	door	white	XRF-H2-HA116-09	E. exit door	0.05	-
metal	exterior wall	grey	XRF-H2-HA117-10	E. wall	0.03	-
metal	exterior wall	grey	XRF-H2-HA117-11	S. wall	0.09	-
metal	exterior wall	grey	XRF-H2-HA117-12	W. wall	0.05	-



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LEAD SAMPLE LOG – Building H3						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	exterior window	white	XRF-H3-HA112-01	E. window frame	>5.0	+
metal	exterior window	white	XRF-H3-HA112-02	W. window frame N	>5.0	+
metal	exterior window	white	XRF-H3-HA112-03	W. window frame S	>5.0	+
brick	exterior wall	blue	XRF-H3-HA113-04	S. wall	0.02	-
brick	exterior wall	blue	XRF-H3-HA113-05	W. wall	0.01	-
brick	exterior wall	blue	XRF-H3-HA113-06	N. wall	0.01	-



LEAD SAMPLE LOG – Building I1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	wall	white	XRF-I1-HA46-01	N. interior wall	0.00	-
metal	wall	white	XRF-I1-HA46-02	S. interior wall	0.00	-
metal	wall	white	XRF-I1-HA46-03	N. exterior wall	0.00	-

LEAD SAMPLE LOG – Building I2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	support beam	grey	XRF-I2-HA47-01	W. beam	>5.0	+
metal	support beam	grey	XRF-I2-HA47-02	N. beam	>5.0	+
metal	support beam	grey	XRF-I2-HA47-03	S. beam	>5.0	+
metal	hopper	grey	XRF-I2-HA48-04	central hopper S. side	0.03	-
metal	hopper	grey	XRF-I2-HA48-05	central hopper N. side	0.04	-
metal	hopper	grey	XRF-I2-HA48-06	central hopper NE side	0.01	-
metal	AST	blue	XRF-I2-HA49-07	S. side	0.00	-
metal	AST	blue	XRF-I2-HA49-08	W. side	0.01	-
metal	AST	blue	XRF-I2-HA49-09	E. side	0.00	-
wood	door frame	grey	XRF-I2-HA50-10	elevator door frame	0.14	-
wood	door frame	grey	XRF-I2-HA50-11	elevator door frame	2.88	+
wood	door frame	grey	XRF-I2-HA50-12	interior door frame	>5.0	+



LEAD SAMPLE LOG – Building I3						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	grey	XRF-I3-HA51-13	top of door frame W. side	2.66	+
wood	door frame	grey	XRF-I3-HA51-14	interior door frame	0.53	
wood	door frame	grey	XRF-I3-HA51-15	interior door frame	4.53	+
metal	conveyor belt support	red	XRF-I3-HA52-16	S. end support beam	0.38	-
metal	conveyor belt support	red	XRF-I3-HA52-17	central support beam	0.85	-
metal	conveyor belt support	red	XRF-I3-HA52-18	N. support beam	0.93	-
wood	floor	white	XRF-I3-HA53-19	upper level wood floor	>5.0	+
wood	wall beam	white	XRF-I3-HA53-20	W. wall support	>5.0	+
wood	wall beam	white	XRF-I3-HA53-21	E. wall support	>5.0	+
metal	wall	white	XRF-I3-HA54-22	W. exterior wall	0.68	-
metal	wall	white	XRF-I3-HA54-23	S. exterior wall	0.55	-
metal	wall	white	XRF-I3-HA54-24	E. exterior wall	0.31	-
metal	conveyor lift	grey	XRF-I3-HA55-25	N. side vertical conveyor	2.59	+
metal	conveyor lift	grey	XRF-I3-HA55-26	W. side vertical conveyor	2.12	+
metal	conveyor lift	grey	XRF-I3-HA55-27	E. side vertical conveyor	2.75	+
metal	conveyor	white w/ blue	XRF-I3-HA56-28	W. side conveyor housing	2.45	+
metal	conveyor	white w/ blue	XRF-I3-HA56-29	W. side conveyor support	1.60	+
metal	conveyor	white w/ blue	XRF-I3-HA56-30	top of conveyor housing	2.32	+

Paint Chip sample was collected from HA51 (sample PC-I3-HA51-01) laboratory result was 160,000 mg/kg lead, confirms XRF result as LBP.



LEAD SAMPLE LOG – Building J						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	door frame	blue	XRF-J-HA40-01	W. end interior garage	0.00	-
metal	door frame	blue	XRF-J-HA40-02	W. end interior garage	0.00	-
metal	door frame	blue	XRF-J-HA40-03	W. end interior garage	0.00	-
metal	support beam	grey	XRF-J-HA41-04	SW corner	3.61	+
metal	support beam	grey	XRF-J-HA41-05	S. center of wall	2.44	+
metal	support beam	grey	XRF-J-HA41-06	N. center of wall	>5.0	+
metal	wall	white	XRF-J-HA42-07	N. wall	0.00	-
metal	wall	white	XRF-J-HA42-08	E. wall	0.00	-
metal	wall	white	XRF-J-HA42-09	N. central wall	0.00	-
metal	support beam	white	XRF-J-HA43-10	NE corner by office	>5.0	+
metal	support beam	white	XRF-J-HA43-11	rotary kiln horizontal support beam	>5.0	+
metal	support beam	white	XRF-J-HA43-12	N. side structural support	0.00	-
metal	exterior wall	white	XRF-J-HA44-13	S. wall	0.10	-
metal	exterior wall	white	XRF-J-HA44-14	W. wall	0.00	-
metal	exterior wall	white	XRF-J-HA44-15	N. wall	0.00	-
metal	external conveyor	grey	XRF-J-HA44-16	stairs	0.00	-
metal	external conveyor	grey	XRF-J-HA44-17	riser	0.00	-
metal	external conveyor	grey	XRF-J-HA44-18	cat walk	0.00	-

Paint Chip sample was collected from HA41 (sample PC-J-HA41-01) laboratory result was 28,000 mg/kg lead, confirms XRF result as LBP.



LEAD SAMPLE LOG – Building L1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
plaster	wall	yellow	XRF-L1-HA99-01	N. wall	2.95	+
plaster	wall	yellow	XRF-L1-HA99-02	W. wall, interior	>1.0	+
plaster	wall	yellow	XRF-L1-HA99-03	E. wall, interior	0.01	-
wood	door frame	green	XRF-L1-HA100-04	hallway, S. door	0.31	-
wood	door frame	green	XRF-L1-HA100-05	hallway, N. door	1.00	+
wood	window casing	green	XRF-L1-HA100-06	hallway	0.37	-
wood	ceiling	white	XRF-L1-HA101-07	hallway	0.05	-
wood	ceiling	white	XRF-L1-HA101-08	NW room	1.54	+
wood	ceiling	white	XRF-L1-HA101-09	SW lab room	0.26	-
wood	door frame	white	XRF-L1-HA102-10	SW room S exit	0.89	-
wood	door frame	white	XRF-L1-HA102-11	central door, W side	0.78	-
wood	door	white	XRF-L1-HA102-12	E. exit	>5.0	+
brick	exterior wall	red	XRF-L1-HA103-13	E. wall	0.01	-
brick	exterior wall	red	XRF-L1-HA103-14	N. wall	0.02	-
brick	exterior wall	red	XRF-L1-HA103-15	W. wall	0.04	-

Paint Chip sample was collected from HA101 (sample PC-L1-HA101-01) laboratory result was 1,700 mg/kg lead, which suggests non-LBP. However, one of the XRF results exceeds 1.0, which suggests HA101 should be treated as LBP.



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LEAD SAMPLE LOG – Building L2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door frame	white	XRF-L2-HA104-01	N. frame	0.02	-
wood	door frame	white	XRF-L2-HA104-02	central frame	0.15	-
wood	door frame	white	XRF-L2-HA104-03	S. frame	0.44	-
wood	ceiling joist	white	XRF-L2-HA104-04	S. joist	>5.0	+
wood	ceiling joist	white	XRF-L2-HA104-05	central joist	>5.0	+
wood	ceiling joist	white	XRF-L2-HA104-06	central location	>5.0	+
brick	exterior wall	red	XRF-L2-HA105-07	south pillar	0.01	-
brick	exterior wall	red	XRF-L2-HA105-08	SE wall	0.01	-
brick	exterior wall	red	XRF-L2-HA105-09	N. wall	0.00	-
concrete	exterior window sill	white	XRF-L2-HA106-10	N. sill	>5.0	+
concrete	exterior window sill	white	XRF-L2-HA106-11	central sill	4.35	+
concrete	exterior window sill	white	XRF-L2-HA106-12	S. sill	>5.0	+



LEAD SAMPLE LOG – Building M						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
brick	wall	white	XRF-M-HA86-01	S. wall	0.02	-
brick	wall	white	XRF-M-HA86-02	W. wall	0.64	-
brick	wall	white	XRF-M-HA86-03	N. wall garage	0.17	-
wood	pilar	white	XRF-M-HA87-04	W. central pilar	1.21	+
wood	pilar	white	XRF-M-HA87-05	2nd W. pilar	1.00	+
wood	pilar	white	XRF-M-HA87-06	E. pilar	>5.0	+
wood	door	white	XRF-M-HA88-07	S. door	0.08	-
wood	door	white	XRF-M-HA88-08	W. interior door to shed	4.08	+
wood	door	white	XRF-M-HA88-09	W. entrance door	2.89	+
wood	door	grey	XRF-M-HA89-10	N. door in garage	4.19	+
wood	door frame	grey	XRF-M-HA89-11	N. interior door frame	1.16	+
wood	door frame	grey	XRF-M-HA89-12	door to office	>5.0	+
metal	support beam	white	XRF-M-HA90-13	NW support beam by office	4.57	+
metal	support beam	white	XRF-M-HA90-14	SW beam by office	3.81	+
metal	support beam	white	XRF-M-HA90-15	NE beam by office	1.63	+
wood	cabinet	white	XRF-M-HA91-16	E. central storage room side wall	>5.0	+
wood	cabinet	white	XRF-M-HA91-17	storage room cabinet door	0.50	-
wood	cabinet	white	XRF-M-HA91-18	storage room side wall to cabinet S. side	0.01	-
wood	ceiling joist	white	XRF-M-HA92-19	W. side joist work room, N. joist	0.01	-
wood	ceiling joist	white	XRF-M-HA92-20	S. joist	0.02	-



LEAD SAMPLE LOG – Building M						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	floor board	white	XRF-M-HA92-21	W. side work room floor board	0.01	-
concrete	pilar	white	XRF-M-HA93-22	central recreation room SE pilar	1.77	+
concrete	pilar	white	XRF-M-HA93-23	NW pilar	1.20	+
concrete	pilar	white	XRF-M-HA93-24	SW pilar	1.53	+
wood	wall	yellow	XRF-M-HA94-25	W. central room w/ sink S. wall	0.69	-
wood	wall	yellow	XRF-M-HA94-26	N wall W central room w/ sink	0.47	-
wood	wall	yellow	XRF-M-HA94-27	E wall w central room w/ sink	0.60	-
concrete	pilar	blue	XRF-M-HA95-28	central pilar lunch room	1.00	+
concrete	pilar	blue	XRF-M-HA95-29	N. pilar lunch room	1.00	+
brick	wall	blue	XRF-M-HA95-30	NE wall	1.14	+
concrete	floor	grey	XRF-M-HA96-31	NE in locker room	0.06	-
concrete	floor	grey	XRF-M-HA96-32	S. center in locker room	1.00	+
concrete	floor	grey	XRF-M-HA96-33	N. central in locker room	0.04	-
brick	exterior wall	red	XRF-M-HA97-34	W. wall	0.01	-
brick	exterior wall	red	XRF-M-HA97-35	S. wall	0.17	-
brick	exterior wall	red	XRF-M-HA97-36	E. wall	0.01	-
cinder block	exterior wall	white	XRF-M-HA98-37	E. wall N	1.00	+
cinder block	exterior wall	white	XRF-M-HA98-38	E. wall S	1.00	+
cinder block	exterior wall	white	XRF-M-HA98-39	N. wall of garage	0.03	-

Paint Chip sample was collected from HA91 (sample PC-M-HA91-01) laboratory result was 160 mg/kg lead, which suggests non-LBP. However, one of the XRF results exceeds 1.0, which suggests HA91 should be treated as LBP.



LEAD SAMPLE LOG – Building N						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
wood	door	red	XRF-N-HA107-01	SE office door	0.03	-
wood	door	red	XRF-N-HA107-02	SW office door	0.01	-
wood	door	red	XRF-N-HA107-03	door to hallway	0.02	-
steel	door frame	black	XRF-N-HA108-04	main office restroom	0.00	-
steel	door frame	black	XRF-N-HA108-05	storage room door	0.00	-
steel	door frame	black	XRF-N-HA108-06	SE office door	0.00	-
cinder block	exterior wall	white w/ blue	XRF-N-HA109-07	E. wall	0.00	-
cinder block	exterior wall	white w/ blue	XRF-N-HA109-08	S. wall	0.00	-
cinder block	exterior wall	white w/ blue	XRF-N-HA109-09	N. wall	0.00	-
concrete	exterior window sill	blue	XRF-N-HA110-10	SE window	1.00	+
concrete	exterior window sill	blue	XRF-N-HA110-11	NE window	1.00	+
concrete	exterior window sill	blue	XRF-N-HA110-12	SW window	0.00	-
wood	exterior soffet	light blue	XRF-N-HA111-13	SE wall	0.05	-
wood	exterior soffet	light blue	XRF-N-HA111-14	S. wall	0.07	-
wood	exterior soffet	light blue	XRF-N-HA111-15	S. on W. wall	0.04	-

Paint Chip sample was collected from HA111 (sample PC-N-HA111-01) laboratory result was 400 mg/kg lead, which confirms the XRF results as non-LBP.



LEAD SAMPLE LOG – Building O						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
brick	wall	white	XRF-O-HA80-01	N. wall	>5.0	+
brick	wall	white	XRF-O-HA80-02	E. wall	>5.0	+
brick	wall	white	XRF-O-HA80-03	S. wall	3.49	+
wood	door frame	white	XRF-O-HA81-04	S. door frame	0.10	-
wood	door	white	XRF-O-HA81-05	E. door	0.00	-
wood	door	white	XRF-O-HA81-06	N. door	0.04	-
metal	support beam	white	XRF-O-HA82-07	N. beam	0.03	-
metal	support beam	white	XRF-O-HA82-08	NW beam	0.10	-
metal	support beam	white	XRF-O-HA82-09	W. central beam	0.05	-
metal	support beam	grey	XRF-O-HA83-10	W. central beam	0.07	-
metal	support beam	grey	XRF-O-HA83-11	N. central beam	0.01	-
metal	support beam	grey	XRF-O-HA83-12	S. central beam	0.01	-
wood	ceiling joist	white	XRF-O-HA84-13	W. beam	>5.0	+
wood	ceiling joist	white	XRF-O-HA84-14	W. beam	>5.0	+
wood	ceiling	white	XRF-O-HA84-15	ceiling	>5.0	+
brick	exterior wall	red	XRF-O-HA85-16	E. wall	0.01	-
brick	exterior wall	red	XRF-O-HA85-17	S. wall	0.08	-
brick	exterior wall	red	XRF-O-HA85-18	N. wall	0.10	-

Paint Chip sample was collected from HA81 (sample PC-O-HA81-01) laboratory result was 660 mg/kg lead, confirms XRF result as non-LBP.



LEAD SAMPLE LOG – Building P1						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
brick	wall	white	XRF-P1-HA73-01	S. wall	0.04	-
brick	wall	white	XRF-P1-HA73-02	E. wall	0.05	-
brick	wall	white	XRF-P1-HA73-03	N. wall	0.09	-
wood	door frame	white	XRF-P1-HA74-04	W. end door frame	>5.0	+
wood	wall	white	XRF-P1-HA74-05	E. side central wall	>5.0	+
wood	wall	white	XRF-P1-HA74-06	S. interior wall	>5.0	+
wood	wall	grey	XRF-P1-HA75-07	bookshelf wall	>5.0	+
wood	wall	grey	XRF-P1-HA75-08	S. interior wall	>5.0	+
wood	door frame	grey	XRF-P1-HA75-09	central door south side	>5.0	+
concrete	floor	grey	XRF-P1-HA76-10	SE in building	0.05	-
concrete	floor	grey	XRF-P1-HA76-11	center of floor	0.05	-
concrete	floor	grey	XRF-P1-HA76-12	NW floor	0.09	-
brick	wall	grey	XRF-P1-HA77-13	W. wall	>5.0	+
brick	wall	grey	XRF-P1-HA77-14	N. wall	>5.0	+
brick	wall	grey	XRF-P1-HA77-15	S. wall in office	>5.0	+
brick	exterior wall	red	XRF-P1-HA78-16	N. wall	0.02	-
brick	exterior wall	red	XRF-P1-HA78-17	W. wall	0.06	-
brick	exterior wall	red	XRF-P1-HA78-18	S. wall	0.01	-
metal	exterior wall	grey	XRF-P1-HA79-19	S. wall	0.05	-
metal	exterior wall	grey	XRF-P1-HA79-20	E. wall	0.15	-
metal	exterior wall	grey	XRF-P1-HA79-21	N. wall	0.09	-



LEAD SAMPLE LOG – Building P2						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
brick	wall	white	XRF-P2-HA66-01	W. wall	0.06	-
brick	wall	white	XRF-P2-HA66-02	S. wall W. end	0.06	-
brick	wall	white	XRF-P2-HA66-03	S. wall E. end	0.06	-
brick	wall	dark grey	XRF-P2-HA67-04	W. wall	>5.0	+
brick	wall	dark grey	XRF-P2-HA67-05	S. wall W. end	>5.0	+
brick	wall	dark grey	XRF-P2-HA67-06	S. wall E. end	>5.0	+
wood	wall	white	XRF-P2-HA68-07	N. wall W	0.02	-
wood	wall	white	XRF-P2-HA68-08	N. wall center	0.01	-
wood	wall	white	XRF-P2-HA68-09	N. wall E.	0.03	-
wood	panel	white	XRF-P2-HA69-10	center of E wall	>5.0	+
wood	panel	white	XRF-P2-HA69-11	S. on E. wall	>5.0	+
wood	panel	white	XRF-P2-HA69-12	N. on E. wall	>5.0	+
wood	panel	grey	XRF-P2-HA70-13	S. of E. wall	>5.0	+
wood	panel	grey	XRF-P2-HA70-14	center on E. wall	>5.0	+
wood	panel	grey	XRF-P2-HA70-15	N. on E. wall	>5.0	+
wood	door	white	XRF-P2-HA71-16	interior NE door	0.00	-
wood	door	white	XRF-P2-HA71-17	exterior NE door	0.29	-
wood	door	white	XRF-P2-HA71-18	interior NW door	0.10	-
brick	exterior wall	red	XRF-P2-HA72-19	N. wall	0.01	-
brick	exterior wall	red	XRF-P2-HA72-20	E. wall	0.02	-
brick	exterior wall	red	XRF-P2-HA72-21	S. wall	0.03	-

Paint Chip sample was collected from HA71 (sample PC-P2-HA71-01) laboratory result was 2,600 mg/kg lead, confirms XRF result as non-LBP.



EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/21/2010

LEAD SAMPLE LOG – ASTs						
Substrate	Component	Color	Sample Number	Test Location	Innovex Reading	Classification (+/-)
metal	exterior tank	white	XRFAST-HA118-01	west tank	2.93	+
metal	exterior tank	white	XRF-AST-HA118-02	west tank	2.07	+
metal	exterior tank	white	XRF-AST-HA118-03	west tank	2.06	+
metal	support beam	white	XRF-AST-HA119-04	W. beam	0.65	-
metal	support beam	white	XRF-AST-HA119-05	central beam	1.37	+
metal	support beam	white	XRF-AST-HA119-06	N. beam	1.11	+



## **Appendix E: Residual Results**





TABLE 1: LEAD RESULTS FOR RESIDUAL SAMPLES

EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

August-September 2010

RESIDUAL SAMPLE LOG			Lead Results	
Sample Number	Material Description	Sample Location	Total Lead (mg/kg)	TCLP Lead (mg/L)
R-B-HA4-17 (lab R-B-HA3-17)	Concrete	Building B - tin building south wall east end interior	41	0.0947
R-A-HA4-18	Concrete	Building A - east floor	1100	1.06
R-B-HA3-18	Brick	Building B - interior north wall east end	810	5.05
R-B-HA4-19	Concrete	Building B - east, west, and center	350	0.195
R-C-HA1-01	residual product	Building C - center furnace	370	1.3
R-C-HA1-02	residual brick and product	Building C - west furnace	22000	28.9
R-C-HA2-01	cinder block	Building C - west wall	110	0.111
R-CS-HA1-16	chimney stack ash	Chimney stack	190	U
R-D1-HA2-03	product and brick	Building D1 - exterior north wall	1800	3.24
R-D1-HA2-04	white product	Building D1 - north end metal machine	1500	3.95
R-D1-HA2-05	white product	Building D1 - grey, weathered or burned	15000	6
R-D1-HA2-06	white product	Building D1 - grey, chunk more solid	53000	22.7
R-D1-HA3-11	brick	Building D1 - interior by north lab	140	1.13
R-D1-HA4-09	Concrete	Building D1 - floor along west wall	6200	0.0583
R-D1-HA4-10	Concrete	Building D1 - wall exterior NW corner	110	0.0744
R-D2-HA3-07	Brick	Building D2 - north wall	51	2.38
R-D2-HA3-08	Brick Duplicate	Building D2 - north wall	9.1	0.0923
RD-D1-HA4-20	Concrete	Building D1 - hallway north, center, east, and south duplicate	1500	0.191
RD-D1-HA4-21	Concrete	Building D1 - hallway north, center, east, and south	2000	0.161
R-G-HA4-16	concrete	Building G - concrete wall	13	0.0815
R-G-HA4-22	Concrete	Building G - center, north, south, and west	830	0.163
R-I-HA1-15	product in metal	between Building I and Building J	630	0.867
R-J-HA1-12	brick furnace	Building J - west end	40	0.357
R-J-HA4-13	concrete base of machine	Building J	370	0.0889
R-J-HA4-14	concrete floor	Building J - high floor east	200	0.118
R-K-HA3-19	brick	Building K - southside	71	0.0714
R-L1-HA3-20	brick	Building L1 - northwall	240	3.72
R-L1-HA3-21	Brick Duplicate	Building L1 - northwall duplicate	89	0.179
R-M-HA3-24	composite brick	Building M - north, west, and south walls	48	0.51
R-M-HA3-22	brick	Building M - east wall	94	0.304
R-M-HA4-23	Concrete	Building M - center, north, east, south and west	240	0.105
R-N-HA2-02	cinder block	Building N - exterior east wall	2.4	0.116
R-P1-HA3-22	exterior brick	Building P1 - north side	21	0.0585
R-P1-HA3-23	composite brick	Building P1 - south, west, and north walls	1100	11.9
Concentration of Contaminant for the Toxicity Characteristic (40 CFR 261.3)				5
Construction Worker Soil Remediation Objective for Ingestion (35 IAC Part 742)			700	

Concentrations above the Toxicity Characteristic are considered a lead hazardous waste and would require hazardous waste disposal and/or stabilization

Concentrations above the CW SRO will require health and safety precautions and special handling.



TABLE 2: TCLP METAL RESULTS FOR RESIDUAL SAMPLES

August-September 2010

EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

RESIDUAL SAMPLE LOG			Other TCLP Metal Results (Mg/L)				
Sample Number	Material Description	Sample Location	Copper	Manganese	Zinc	Arsenic	Cadmium
R-B-HA4-17 (lab R-B-HA3-17)	Concrete	Building B - tin building south wall east end interior	U	1.16	34.4	U	0.0369
R-A-HA4-18	Concrete	Building A - east floor	0.102	1.34	207	U	0.284
R-B-HA3-18	Brick	Building B - interior north wall east end	0.286	0.618	3310	U	0.186
R-B-HA4-19	Concrete	Building B - east, west, and center	0.151	1.66	386	U	0.0673
R-C-HA1-01	residual product	Building C - center furnace	U	0.0822	2780	U	2.59
R-C-HA1-02	residual brick and product	Building C - west furnace	U	0.434	2450	U	0.0403
R-C-HA2-01	cinder block	Building C - west wall	0.0921	2.19	296	U	0.0233
R-CS-HA1-16	chimney stack ash	Chimney stack	0.132	3.07	397	U	0.04
R-D1-HA2-03	product and brick	Building D1 - exterior north wall	0.185	0.0739	3230	U	0.916
R-D1-HA2-04	white product	Building D1 - north end metal machine	U	0.0173	3090	U	0.154
R-D1-HA2-05	white product	Building D1 - grey, weathered or burned	0.607	0.923	4180	U	3.47
R-D1-HA2-06	white product	Building D1 - grey, chunk more solid	0.24	0.521	1280	U	12.8
R-D1-HA3-11	brick	Building D1 - interior by north lab	0.0797	0.599	485	U	0.218
R-D1-HA4-09	Concrete	Building D1 - floor along west wall	U	0.377	0.399	U	0.233
R-D1-HA4-10	Concrete	Building D1 - wall exterior NW corner	U	0.116	5.33	U	U
R-D2-HA3-07	Brick	Building D2 - north wall	0.203	0.138	77.9	U	0.053
R-D2-HA3-08	Brick Duplicate	Building D2 - north wall	U	0.291	10.6	U	0.0428
RD-D1-HA4-20	Concrete	Building D1 - hallway north, center, east, and south duplicate	0.0726	3.07	395	U	4.72
RD-D1-HA4-21	Concrete	Building D1 - hallway north, center, east, and south	U	2.72	239	U	2.35
R-G-HA4-16	concrete	Building G - concrete wall	0.0651	2.1	119	U	0.0125
R-G-HA4-22	Concrete	Building G - center, north, south, and west	0.0703	2.16	2490	U	2.17
R-I-HA1-15	product in metal	between Building I and Building J	U	0.693	3470	U	0.53
R-J-HA1-12	brick furnace	Building J - west end	U	1.48	1450	U	0.779
R-J-HA4-13	concrete base of machine	Building J	0.225	0.855	378	U	0.123
R-J-HA4-14	concrete floor	Building J - high floor east	U	1.39	387	U	0.725
R-K-HA3-19	brick	Building K - southside	U	0.356	83.5	U	0.227
R-L1-HA3-20	brick	Building L1 - northwall	0.0761	0.554	55.7	U	0.0915
R-L1-HA3-21	Brick Duplicate	Building L1 - northwall duplicate	0.0613	0.166	16.5	U	0.0343
R-M-HA3-24	composite brick	Building M - north, west, and south walls	0.0817	0.42	18.5	U	0.036
R-M-HA3-22	brick	Building M - east wall	0.104	0.53	45.4	U	0.052
R-M-HA4-23	Concrete	Building M - center, north, east, south and west	U	2.42	38.5	U	0.0322
R-N-HA2-02	cinder block	Building N - exterior east wall	U	1.58	20.2	U	0.0108
R-P1-HA3-22	exterior brick	Building P1 - north side	U	0.324	13.9	U	0.0236
R-P1-HA3-23	composite brick	Building P1 - south, west, and north walls	0.182	0.9	15.5	U	0.0743
Concentration of Contaminant for the Toxicity Characteristic (40 CFR 261.30 Table 1)			NA	NA	NA	5	1
Generic Exclusion Levels for F006 non Wastewater HTMR residues (40 CFR 261.3)					70	0.5	0.05
"Non-wastewater residue, such as slag, resulting from ... kilns", this description may be similar to conditions observed Universal Treatment Standards (40 CFR 268.48)					4.3		0.11



TABLE 3: OTHER TOTAL METALS RESULTS FOR RESIDUAL SAMPLES

August-September 2010

EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

RESIDUAL SAMPLE LOG			Other Total Metal Results (mg/kg)				
Sample Number	Material Description	Sample Location	Copper	Manganese	Zinc	Arsenic	Cadmium
R-B-HA4-17 (lab R-B-HA3-17)	Concrete	Building B - tin building south wall east end interior	9.9	310	2600	1.9	2.6
R-A-HA4-18	Concrete	Building A - east floor	59	760	21000	14	21
R-B-HA3-18	Brick	Building B - interior north wall east end	78	300	250000	3.9	12
R-B-HA4-19	Concrete	Building B - east, west, and center	340	420	60000	2	6.1
R-C-HA1-01	residual product	Building C - center furnace	83	12	610000	2.2	150
R-C-HA1-02	residual brick and product	Building C - west furnace	300	98	550000	6.7	71
R-C-HA2-01	cinder block	Building C - west wall	55	390	8300	1.5	3.4
R-CS-HA1-16	chimney stack ash	Chimney stack	150	810	140000	5.7	26
R-D1-HA2-03	product and brick	Building D1 - exterior north wall	120	16	570000	3.5	92
R-D1-HA2-04	white product	Building D1 - north end metal machine	8.5	7.2	580000	U	21
R-D1-HA2-05	white product	Building D1 - grey, weathered or burned	730	660	380000	37	220
R-D1-HA2-06	white product	Building D1 - grey, chunk more solid	2000	150	520000	83	930
R-D1-HA3-11	brick	Building D1 - interior by north lab	6.7	180	23000	2.2	11
R-D1-HA4-09	Concrete	Building D1 - floor along west wall	69	450	92000	4.4	920
R-D1-HA4-10	Concrete	Building D1 - wall exterior NW corner	27	380	6200	U	6.8
R-D2-HA3-07	Brick	Building D2 - north wall	5.4	76	1400	U	1
R-D2-HA3-08	Brick Duplicate	Building D2 - north wall	2.8	210	510	2.6	1.4
RD-D1-HA4-20	Concrete	Building D1 - hallway north, center, east, and south duplicate	56	590	39000	7.3	460
RD-D1-HA4-21	Concrete	Building D1 - hallway north, center, east, and south	76	550	58000	4.2	260
R-G-HA4-16	concrete	Building G - concrete wall	40	250	5100	U	0.7
R-G-HA4-22	Concrete	Building G - center, north, south, and west	340	570	450000	9.8	450
R-I-HA1-15	product in metal	between Building I and Building J	59	74	580000	5.2	38
R-J-HA1-12	brick furnace	Building J - west end	22	190	39000	2.7	26
R-J-HA4-13	concrete base of machine	Building J	1000	570	170000	21	37
R-J-HA4-14	concrete floor	Building J - high floor east	41	380	32000	2.1	96
R-K-HA3-19	brick	Building K - southside	19	300	7100	2.6	16
R-L1-HA3-20	brick	Building L1 - northwall	11	150	2500	2.3	3.1
R-L1-HA3-21	Brick Duplicate	Building L1 - northwall duplicate	9.2	280	2500	3.1	3.8
R-M-HA3-24	composite brick	Building M - north, west, and south walls	3	160	350	1.9	1.4
R-M-HA3-22	brick	Building M - east wall	20	130	3800	3.7	3.5
R-M-HA4-23	Concrete	Building M - center, north, east, south and west	180	850	5500	9	4.5
R-N-HA2-02	cinder block	Building N - exterior east wall	11	290	79	3.1	0.2
R-P1-HA3-22	exterior brick	Building P1 - north side	6.6	100	1100	2.8	1.1
R-P1-HA3-23	composite brick	Building P1 - south, west, and north walls	35	150	3300	3.4	9.3
Construction Worker Soil Remediation Objective for Ingestion (35 IAC Part 742)			8200	4100	61000	61	200

CW SRO for total Copper is 8,200 mg/kg

CW SRO for total Manganese is 4,100 mg/kg

CW SRO for total Zinc is 61,000 mg/kg

CW SRO for total Arsenic is 61 mg/kg for Ingestion, 25,000mg/kg for Inhalation

CW SRO for total Cadmium is 200 mg/kg for Ingestion, 59,000 mg/kg for inhalation



## SAMPDATA

CLIENT	PROJECT	PROJECTNUM	LabName	SAMPLENAME	LABSAMPID	MATRIX	RPTMATRIX	BATCH	METHODCODE	ANALYTE	CASNUMBER	Result	DL	RL
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	94.7	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1160	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	34400	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-17	E100806-01	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	36.9	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	286	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	5050	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	618	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	3310000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA3-18	E100806-02	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	186	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	58.3	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	377	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	399	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-09	E100806-03	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	233	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	74.4	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	116	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	5330	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-10	E100806-04	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	U	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	92.3	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	291	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	10600	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D2-HA3-08	E100806-05	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	42.8	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	203	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	2380	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	138	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	77900	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D2-HA3-07	E100806-06	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	53.0	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	65.1	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	81.5	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	2100	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	119000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-16	E100806-07	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	12.5	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	357	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1480	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	1450000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA1-12	E100806-08	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	779	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	71.4	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	356	10.0	150

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Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	83500	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-K-HA3-19	E100806-09	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	227	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	61.3	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	179	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	166	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	16500	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-L1-HA3-21	E100806-10	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	34.3	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	1300	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	82.2	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	2780000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-01	E100806-11	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	2590	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	28900	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	434	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	2450000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA1-02	E100806-12	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	40.3	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	185	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	3240	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	73.9	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	3230000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-03	E100806-13	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	916	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	3950	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	17.3	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	3090000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-04	E100806-14	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	154	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	607	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	6000	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	923	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	4180000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-05	E100806-15	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	3470	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	240	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	22700	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	521	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	1280000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA2-06	E100806-16	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	12800	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	79.7	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	1130	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	599	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	485000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA3-11	E100806-17	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	218	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250

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Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	867	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	693	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	3470000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-I-HA1-15	E100806-18	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	530	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	225	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	88.9	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	855	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	378000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-13	E100806-19	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	123	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	118	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1390	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	387000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-J-HA4-14	E100806-20	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	725	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	76.1	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	3720	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	554	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	55700	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-L1-HA3-20	E100806-21	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	91.5	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	104	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	304	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	530	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	45400	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-22	E100806-22	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	52.0	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	102	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	1060	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1340	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	207000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-A-HA4-18	E100806-23	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	284	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	151	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	195	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1660	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	386000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-B-HA4-19	E100806-24	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	67.3	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	92.1	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	111	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	2190	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	296000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-C-HA2-01	E100806-25	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	23.3	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	161	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	2720	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	239000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200

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Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-D1-HA4-21	E100806-26	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	2350	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	72.6	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	191	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	3070	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	395000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	RD-D1-HA4-20	E100806-27	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	4720	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	70.3	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	163	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	2160	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	2490000	400	6000
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-G-HA4-22	E100806-28	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	2170	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	81.7	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	510	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	420	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	18500	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA3-24	E100806-29	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	36.0	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	105	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	2420	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	38500	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-M-HA4-23	E100806-30	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	32.2	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Lead	7439-92-1	116	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Manganese	7439-96-5	1580	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Zinc	7440-66-6	20200	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-N-HA2-02	E100806-31	TCLP EXTRACT	Soil	EI00203	Metals ICP TCLP TAL	Cadmium	7440-43-9	10.8	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	U	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	58.5	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	324	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	13900	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-22	E100806-32	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	23.6	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	182	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	11900	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	900	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	15500	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-P1-HA3-23	E100806-33	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	74.3	5.0	50.0
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Copper	7440-50-8	132	50.0	250
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Lead	7439-92-1	U	30.0	100
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Manganese	7439-96-5	3070	10.0	150
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Zinc	7440-66-6	397000	40.0	600
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Arsenic	7440-38-2	U	80.0	200
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	R-CS-HA1-16	E100806-34	TCLP EXTRACT	Soil	EI00202	Metals ICP TCLP TAL	Cadmium	7440-43-9	40.0	5.0	50.0

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UNITS	RPTtoMDL	BASIS	DILUTION	SPIKELEVEL	RECOVERY	UPPERCL	LOWERCL	ANALYST	PSOLIDS	LNOTE	ANOTE	LATITUDE	LONGITUDE	sComment	SNOTE1	SNOTE2	SNOTE3	SNOTE4	SNOTE5	SNOTE6
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Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-G-HA61-01	E100806-38	Paint Chips	Paint Chips	08/24/2010 15:05:00	09/09/2010 13:00:00	09/10/2010 11:48:06	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-I3-HA51-01	E100806-39	Paint Chips	Paint Chips	08/24/2010 14:05:00	09/09/2010 13:00:00	09/10/2010 12:07:01	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-J-HA41-01	E100806-40	Paint Chips	Paint Chips	08/24/2010 11:55:00	09/09/2010 13:00:00	09/10/2010 12:09:12	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-O-HA81-01	E100806-41	Paint Chips	Paint Chips	08/24/2010 16:40:00	09/09/2010 13:00:00	09/10/2010 12:11:18	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-P2-HA71-01	E100806-42	Paint Chips	Paint Chips	08/24/2010 16:00:00	09/09/2010 13:00:00	09/10/2010 12:13:21	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-L1-HA101-01	E100806-43	Paint Chips	Paint Chips	08/25/2010 10:35:00	09/09/2010 13:00:00	09/10/2010 12:15:23	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-AST-HA119-01	E100806-44	Paint Chips	Paint Chips	08/25/2010 13:55:00	09/09/2010 13:00:00	09/10/2010 12:17:37	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-M-HA91-01	E100806-45	Paint Chips	Paint Chips	08/25/2010 09:30:00	09/09/2010 13:00:00	09/10/2010 12:42:45	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	PC-N-HA111-01	E100806-46	Paint Chips	Paint Chips	08/25/2010 11:35:00	09/09/2010 13:00:00	09/10/2010 12:46:58	EH03103
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-D1-HA5-01	E100806-47	Wipe	Wipe	08/26/2010 12:30:00	09/09/2010 10:19:00	09/10/2010 10:50:37	EI00901
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-D1-HA5-02	E100806-48	Wipe	Wipe	08/26/2010 12:41:00	09/09/2010 10:19:00	09/10/2010 10:55:04	EI00901
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-D1-HA5-03	E100806-49	Wipe	Wipe	08/26/2010 12:48:00	09/09/2010 10:19:00	09/10/2010 10:57:55	EI00901
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-G-HA5-05	E100806-50	Wipe	Wipe	08/26/2010 13:21:00	09/09/2010 10:19:00	09/10/2010 11:00:20	EI00901
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-G-HA5-06	E100806-51	Wipe	Wipe	08/26/2010 13:10:00	09/09/2010 10:19:00	09/10/2010 11:02:31	EI00901
Superfund, US EPA Region 5	Eagle Zinc	10CE30	TechLaw - ESAT Contract	W-J-HA5-04	E100806-52	Wipe	Wipe	08/26/2010 12:55:00	09/09/2010 10:19:00	09/10/2010 11:04:32	EI00901

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METHODCODE	METHODNAME	PREPNAME	ANALYTE	CASNUMBER	SURROGATE	TIC	Result	DL	RL	UNITS	RPTtoMDL	BASIS	DILUTION	SPIKELEVEL	RECOVERY	UPPERCL	LOWERCL	ANALYST
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	9.9	0.4	4.5	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	41	0.5	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	310	0.09	2.7	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	1.9	1.3	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	2600	0.9	11	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	2.6	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	78	0.4	4.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	810	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	300	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.9	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	250000	96	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	12	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	69	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	6200	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	450	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	4.4	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	92000	99	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	920	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	27	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	110	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	380	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	U	1.4	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	6200	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	6.8	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	2.8	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	9.1	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	210	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.6	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	510	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	1.4	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	5.4	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	51	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	76	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	U	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	1400	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	1.0	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	40	0.4	4.7	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	13	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	250	0.09	2.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	U	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	5100	0.9	11	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	0.7	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	22	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	40	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	190	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.7	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	39000	99	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	26	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	19	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	71	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	300	0.1	2.9	mg/kg	TRUE	Dry	1					SC

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Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.6	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	7100	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	16	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	9.2	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	89	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	280	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.1	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	2500	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	3.8	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	83	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	370	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	12	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.2	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	610000	98	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	150	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	300	0.4	4.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	22000	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	98	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	6.7	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	550000	96	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	71	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	120	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	1800	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	16	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.5	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	570000	100	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	92	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	8.5	0.4	4.6	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	1500	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	7.2	0.09	2.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	U	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	580000	93	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	21	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	730	0.4	4.4	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	15000	0.5	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	660	0.09	2.6	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	37	1.2	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	380000	88	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	220	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	2000	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	53000	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	150	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	83	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	520000	99	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	930	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	6.7	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	140	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	180	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.2	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	23000	100	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	11	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	59	0.4	4.9	mg/kg	TRUE	Dry	1					SC

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Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	630	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	74	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	5.2	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	580000	98	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	38	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	1000	0.4	4.7	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	370	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	570	0.09	2.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	21	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	170000	95	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	37	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	41	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	200	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	380	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.1	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	32000	100	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	96	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	11	0.4	4.7	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	240	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	150	0.09	2.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.3	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	2500	0.9	11	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	3.1	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	20	0.4	4.7	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	94	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	130	0.09	2.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.7	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	3800	0.9	11	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	3.5	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	59	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	1100	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	760	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	14	1.4	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	21000	97	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	21	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	340	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	350	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	420	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.0	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	60000	100	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	6.1	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	55	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	110	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	390	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	1.5	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	8300	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	3.4	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	76	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	2000	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	550	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	4.2	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	58000	98	1200	mg/kg	TRUE	Dry	100					SC

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Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	260	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	56	0.4	4.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	1500	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	590	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	7.3	1.3	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	39000	96	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	460	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	340	0.4	4.4	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	830	0.5	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	570	0.09	2.6	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	9.8	1.2	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	450000	88	1100	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	450	0.09	0.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	3.0	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	48	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	160	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	1.9	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	350	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	1.4	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	180	0.4	4.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	240	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	850	0.1	2.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	9.0	1.4	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	5500	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	4.5	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	11	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	2.4	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	290	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.1	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	79	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	0.2	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	6.6	0.3	4.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	21	0.5	1.6	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	100	0.08	2.4	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	2.8	1.1	1.6	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	1100	0.8	9.5	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	1.1	0.08	0.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	35	0.4	5.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	1100	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	150	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	3.4	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	3300	1.0	12	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	9.3	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Copper	7440-50-8	FALSE	FALSE	150	0.4	4.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Lead	7439-92-1	FALSE	FALSE	190	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Manganese	7439-96-5	FALSE	FALSE	810	0.1	3.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Arsenic	7440-38-2	FALSE	FALSE	5.7	1.4	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Zinc	7440-66-6	FALSE	FALSE	140000	99	1200	mg/kg	TRUE	Dry	100					SC
Metals ICP (S)	EPA 200.7	Hot Block Digestion	Cadmium	7440-43-9	FALSE	FALSE	26	0.1	1.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	14	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	26000	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	4200	0.6	2.0	mg/kg	TRUE	Dry	1					SC

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Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	26000	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	160000	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	28000	0.6	1.8	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	660	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	2600	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	1700	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	70000	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	160	0.6	1.9	mg/kg	TRUE	Dry	1					SC
Metals ICP (paint)	EPA 200.7	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	400	0.6	2.0	mg/kg	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	13100	0.15	0.50	ug/wipe	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	26200	0.15	0.50	ug/wipe	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	19000	0.15	0.50	ug/wipe	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	1050	0.15	0.50	ug/wipe	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	1550	0.15	0.50	ug/wipe	TRUE	Dry	1					SC
Metals ICP (wipe)	Metals004/034	EPA 3050B	Lead	7439-92-1	FALSE	FALSE	3190	0.15	0.50	ug/wipe	TRUE	Dry	1					SC

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PSOLIDS	LNOTE	ANOTE	LATITUDE	LONGITUDE	sComment	SNOTE1	SNOTE2	SNOTE3	SNOTE4	SNOTE5	SNOTE6	SNOTE7	SNOTE8	SNOTE9	SNOTE10	ANALYTEORDER
					10CE30-01											12
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					10CE30-37											7
					10CE30-38											12
					10CE30-38											15
					10CE30-38											17
					10CE30-38											3
					10CE30-38											32

SAMPDATA

					10CE30-38											7
					10CE30-39											12
					10CE30-39											15
					10CE30-39											17
					10CE30-39											3
					10CE30-39											32
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					10CE30-43											12
					10CE30-43											15
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					10CE30-43											7
		J			10CE30-47											12
					10CE30-47											15
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		K			10CE30-47											7
					10CE30-48											12
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					10CE30-49											12
					10CE30-49											15
					10CE30-49											17
					10CE30-49											3
					10CE30-49											32
		J, K			10CE30-49											7
					10CE30-50											12
					10CE30-50											15
					10CE30-50											17
					10CE30-50											3
					10CE30-50											32
		K			10CE30-50											7
					10CE30-51											12
					10CE30-51											15
					10CE30-51											17
					10CE30-51											3
					10CE30-51											32
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					10CE30-52											15
					10CE30-52											17
					10CE30-52											3
					10CE30-52											32
					10CE30-52											7
		*, K			10CE30-03											1
					10CE30-06											1
					10CE30-07											1

SAMPDATA

					10CE30-17											1
					10CE30-20											1
					10CE30-21											1
					10CE30-25											1
					10CE30-26											1
					10CE30-27											1
					10CE30-28											1
					10CE30-29											1
					10CE30-30											1
					10CE30-40											4
					10CE30-41											4
					10CE30-42											4
					10CE30-44											4
					10CE30-45											4
					10CE30-46											4

Reference Case:

Client No:

R

Region: 5	Date Shipped: 8/27/2010	Carrier Name: Hand Delivered	Shipped to: EPA Region 5 Central Regional Lab 536 S. Clark Street 10th Floor Chicago IL 60605 (312) 353-9083	Sampler Signature: <i>K. Templin</i>
Project Code:	Airbill:			Received By (Date / Time)
Account Code:				
CERCLIS ID:				
Spill ID:				
Site Name/State: Eagle Zinc OU1/IL				8/27/10 10:01
Project Leader: P. Feeley				8/27/10 15:00
Action:				8/27/10 15:00
Sampling Co: EDI				

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
10CE30-01	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11301 (Not preserved) (1)	R-B-HA3-17	S: 8/24/2010 16:15	--
10CE30-02	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11302 (Not preserved) (1)	R-B-HA3-18	S: 8/24/2010 16:20	--
10CE30-03	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11303 (Not preserved) (1)	PC-C-HA11-01	S: 8/24/2010 15:22	--
10CE30-04	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11304 (Not preserved) (1)	R-C-HA1-01	S: 8/23/2010 16:01	--
10CE30-05	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11305 (Not preserved) (1)	R-C-HA1-02	S: 8/23/2010 15:58	--
10CE30-06	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11306 (Not preserved) (1)	PC-D1-HA21-01	S: 8/24/2010 9:21	--
10CE30-07	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11307 (Not preserved) (1)	PC-D1-HA31-02	S: 8/24/2010 10:40	--
10CE30-08	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11308 (Not preserved) (1)	R-D1-HA2-03	S: 8/24/2010 10:08	--
10CE30-09	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11309 (Not preserved) (1)	R-D1-HA2-04	S: 8/24/2010 11:15	--
10CE30-10	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11310 (Not preserved) (1)	R-D1-HA2-05	S: 8/24/2010 11:20	--

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number: 116 979 / 116 980
Analysis Key: TLAAICP = Total Lead AA or ICP, TLead/TCLP = Total Lead and TCLP Lead	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

IR Number: 5-325854765-082610-0001

\*R provides preliminary results. Requests for preliminary results will increase analytical costs.

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**EPA** USEPA Contract Laboratory Program  
Generic Chain of Custody

Reference Case:  
Client No: **R**

Region: Project Code: Account Code: CERCLIS ID: Spill ID: Site Name/State: Project Leader: Action: Sampling Co:	5     Eagle Zinc OU1/IL P Feeley EDI	Date Shipped: Carrier Name: Airbill: Shipped to:	8/27/2010 Hand Delivered  EPA Region 5 Central Regional Lab 536 S. Clark Street 10th Floor Chicago IL 60605 (312) 353-9083	Chain of Custody Record	Sampler Signature: Received By (Date / Time)	(Date / Time)
		1. <i>[Signature]</i> 8/27/10 1000		8/27/10 1000		
		2. <i>[Signature]</i> 8/27/10 1500		8/27/10 1500		
		3				
		4				

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
10CE30-11	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11311 (Not preserved) (1)	R-D1-HA2-06	S: 8/24/2010 11:25	--
10CE30-12	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11312 (Not preserved) (1)	R-D1-HA3-11	S: 8/24/2010 14:00	--
10CE30-13	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11313 (Not preserved) (1)	R-D1-HA4-09	S: 8/24/2010 12:10	--
10CE30-14	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11314 (Not preserved) (1)	R-D1-HA4-10	S: 8/24/2010 12:15	--
10CE30-15	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11315 (Not preserved) (1)	R-D2-HA3-08	S: 8/24/2010 12:00	--
10CE30-16	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11316 (Not preserved) (1)	RD-D2-HA3-07	S: 8/24/2010 12:01	--
10CE30-17	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11317 (Not preserved) (1)	PC-G-HA61-01	S: 8/24/2010 15:05	--
10CE30-18	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11318 (Not preserved) (1)	R-G-HA4-16	S: 8/24/2010 15:55	--
10CE30-19	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11319 (Not preserved) (1)	R-I-HA1-15	S: 8/24/2010 15:45	--
10CE30-20	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11320 (Not preserved) (1)	PC-I3-HA51-01	S: 8/24/2010 14:05	--

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
			116979/16980
Analysis Key: TLAAICP = Total Lead AA or ICP, TLead/TCLP = Total Lead and TCLP Lead	Concentration: L = Low, M = Low/Medium, H = High Type/Designate: Composite = C, Grab = G	Shipment Iced? _____	

IR Number: **5-325854765-082610-0001**

\*R provides preliminary results. Requests for preliminary results will increase analytical costs.

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Reference Case:

Client No:

R

Region: 5		Date Shipped: 8/27/2010		Chain of Custody Record	
Project Code:		Carrier Name: Hand Delivered		Sampler Signature: <i>[Signature]</i>	
Account Code:		Airbill:		Relinquished By: <i>[Signature]</i> (Date / Time) 8/27/10 1800	
CERCLIS ID:		Shipped to:		Received By: <i>[Signature]</i> (Date / Time) 8/27/10 1800	
Spill ID:		EPA Region 5 Central Regional Lab		2 <i>[Signature]</i> 8/27/10 1800	
Site Name/State:		536 S. Clark Street		3 <i>[Signature]</i> 8/27/10 1800	
Project Leader:		10th Floor		4	
Action:		Chicago IL 60605			
Sampling Co:		(312) 353-9083			

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
10CE30-21	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11321 (Not preserved) (1)	PC-J-HA41-01	S: 8/24/2010 11:55	--
10CE30-22	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11322 (Not preserved) (1)	R-J-HA1-12	S: 8/24/2010 15:10	--
10CE30-23	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11323 (Not preserved) (1)	R-J-HA4-13	S: 8/24/2010 15:20	--
10CE30-24	Other (Unknown)/ P. Feeley	L/G	TLead/TCLP (14)	5C-11324 (Not preserved) (1)	R-J-HA4-14	S: 8/24/2010 15:25	--
10CE30-25	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11325 (Not preserved) (1)	PC-O-HA81-01	S: 8/24/2010 16:40	--
10CE30-26	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11326 (Not preserved) (1)	PC-P2-HA71-01	S: 8/24/2010 16:00	--
10CE30-27	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11329 (Not preserved) (1)	PC-L1-HA101-01	S: 8/25/2010 10:35	--
10CE30-28	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C011327 (Not preserved) (1)	PC-AST-HA119-01	S: 8/25/2010 13:55	--
10CE30-29	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11328 (Not preserved) (1)	PC-M-HA91-01	S: 8/25/2010 9:30	--
10CE30-30	Other (Unknown)/ Kristen Templin	L/G	TLAAICP (14)	5C11330 (Not preserved) (1)	PC-N-HA111-01	S: 8/25/2010 11:35	--

Shipment for Case Completed? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
			116979/116980
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____
TLAAICP = Total Lead AA or TCP, TLead/TCLP = Total Lead and TCLP Lead			

IR Number: 5-325854765-082610-0001

\*IR provides preliminary results. Requests for preliminary results will increase analytical costs.

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**EPA** USEPA Contract Laboratory Program  
Generic Chain of Custody

Reference Case:

Client No:

R

Region: 5	Date Shipped: 8/27/2010	Carrier Name: Hand Delivered	Shipped to: EPA Region 5 Central Regional Lab 536 S. Clark Street 10th Floor Chicago IL 60605 (312) 353-9083
Project Code:	Airbill:		
Account Code:	Shipped to:		
CERCLIS ID:			
Spill ID:			
Site Name/State:			
Project Leader:			
Action:			
Sampling Co:			

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT		QC Type
						DATE	TIME	
10CE30-31	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11331 (Not preserved) (1)	R-K-HA3-19	S: 8/25/2010	9:35	-
10CE30-32	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11332 (Not preserved) (1)	RD-L1-HA3-20	S: 8/25/2010	11:26	-
10CE30-33	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11333 (Not preserved) (1)	R-L1-HA3-21	S: 8/25/2010	11:25	-
10CE30-34	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11334 (Not preserved) (1)	R-M-HA3-22	S: 8/25/2010	12:00	-
10CE30-35	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11335 (Not preserved) (1)	R-A-HA4-18	S: 8/26/2010	12:20	-
10CE30-36	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11336 (Not preserved) (1)	R-B-HA4-19	S: 8/26/2010	15:40	-
10CE30-37	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11337 (Not preserved) (1)	R-C-HA2-01	S: 8/26/2010	12:30	-
10CE30-38	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11338 (Not preserved) (1)	R-D1-HA4-21	S: 8/26/2010	15:45	-
10CE30-39	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11339 (Not preserved) (1)	RD-D1-HA4-20	S: 8/26/2010	15:47	-
10CE30-40	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11340 (Not preserved) (1)	W-D1-HA5-01	S: 8/26/2010	12:30	-

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number: 116979 / 116980
Analysis Key: TLAAICP = Total Lead AA or ICP, TLead/TCLP = Total Lead and TCLP Lead	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment lead?

IR Number: 5-325854765-082610-0001

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Reference Case:

Client No:

R

Region: 5		Date Shipped: 8/27/2010		Chain of Custody Record	
Project Code:		Carrier Name: Hand Delivered		Sampler Signature: <i>[Signature]</i>	
Account Code:		Airbill:		Relinquished By: <i>[Signature]</i> (Date / Time) 8/27/10 1000	
CERCLIS ID:		Shipped to:		Received By: <i>[Signature]</i> (Date / Time) 8/27/10 1001	
Spill ID:		EPA Region 5 Central Regional Lab		2 <i>[Signature]</i> 8/27/10 1800	
Site Name/State:		536 S. Clark Street		3 <i>[Signature]</i> 8/27/10 1800	
Project Leader:		10th Floor		4	
Action:		Chicago IL 60605			
Sampling Co:		(312) 353-9083			

SAMPLE NO.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
10CE30-41	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11341 (Not preserved) (1)	W-D1-HA5-02	S: 8/26/2010 12:41	-
10CE30-42	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11342 (Not preserved) (1)	W-D1-HA5-03	S: 8/26/2010 12:48	-
10CE30-43	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11343 (Not preserved) (1)	R-G-HA4-22	S: 8/26/2010 16:00	-
10CE30-44	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11344 (Not preserved) (1)	W-G-HA5-05	S: 8/26/2010 13:21	-
10CE30-45	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11345 (Not preserved) (1)	W-G-HA5-06	S: 8/26/2010 13:10	-
10CE30-46	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11346 (Not preserved) (1)	W-J-HA5-04	S: 8/26/2010 12:55	-
10CE30-47	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11347 (Not preserved) (1)	R-M-HA3-24	S: 8/26/2010 14:10	-
10CE30-48	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11348 (Not preserved) (1)	R-M-HA4-23	S: 8/26/2010 16:15	-
10CE30-49	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11349 (Not preserved) (1)	R-N-HA2-02	S: 8/26/2010 12:40	-
10CE30-50	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14)	5C-11350 (Not preserved) (1)	R-P1-HA3-22	S: 8/26/2010 11:55	-

Shipment for Case Complete ? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	116979 / 116980
Analysis Key:	Shipment lead?		
TLead/TCLP = Total Lead AA or ICP, TLead/TCLP = Total Lead and TCLP Lead			

IR Number: 5-325854765-082610-0001

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Reference Case:

Client No:

R

Region: 5		Date Shipped: 8/27/2010		Carrier Name: Hand Delivered		Shipped to:	
Project Code:		Airbill:		EPA Region 5 Central Regional Lab		536 S. Clark Street	
Account Code:		Shipped to:		Chicago IL 60605		(312) 353-9083	
CERCLIS ID:		Eagle Zinc OU1/IL		P Feeley		Action:	
Site Name/State:		P Feeley		ED1		Sampling Co:	

Sample No.	Matrix/ Sampler	Conc/ Type	Analysis/ Turnaround	Tag No/ Preservative/ Bottles	Station Location	Sample Collect Date/Time	QC Type
10CE30-51	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14) (1)	5C-11351 (Not preserved) (1)	R-P1-HA3-23	S: 8/26/2010 14:20	
10CE30-52	Other (Unknown)/ Kristen Templin	L/G	TLead/TCLP (14) (1)	5C-11352 (Not preserved) (1)	R-CS-HA1-16	S: 8/26/2010 13:35	

Shipment for Case Complete ? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
			116979 / 116980
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Issued?
TLAAICP = Total Lead AA or ICP, TLead/TCLP = Total Lead and TCLP Lead			

IR Number: 5-325854765-082610-0001

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EAGLE ZINC OU1  
HILLSBORO, ILLINOIS

10/21/2010

RESIDUAL SAMPLE LOG			
Sample Number	Material Description	Sample Location	Total Lead in ug/wipe
W-D1-HA5-01	concrete	Building D1 - north	13100
W-D1-HA5-02	concrete	Building D1 - south	26200
W-D1-HA5-03	wood	Building D1 - south wood shelves	19000
W-G-HA5-05	concrete	Building G - central	1050
W-G-HA5-06	wood	Building G - center wood joist	1550
W-J-HA5-04	concrete	Building J - east center	3190

## Appendix B—Photo Log



**Photo 1:** Interior of concrete portion of Building A (looking west)



**Photo 2:** Exterior of brick portion Building B (looking northwest)



**Photo 3:** Interior of brick portion Building B (looking west)



**Photo 4:** Exterior of Building C (looking southeast)



**Photo 5:** Interior of Building C (looking east)



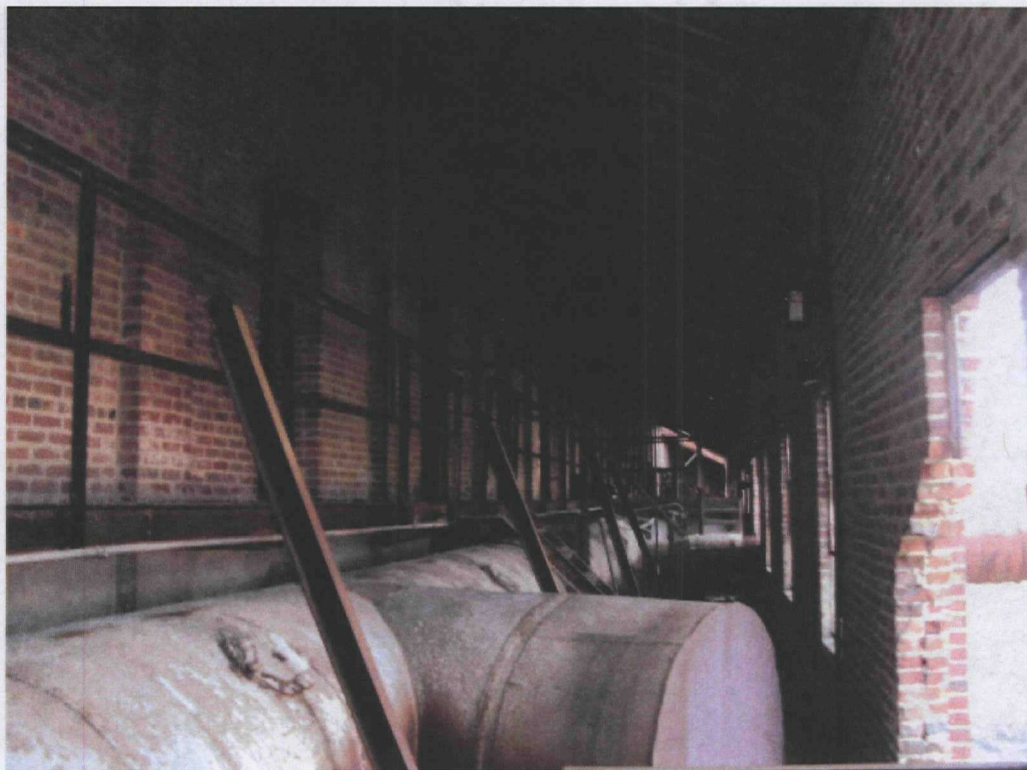
**Photo 6:** Exterior of Building D (looking south east)



**Photo 7:** Exterior of small sheds in Building D area (looking south).



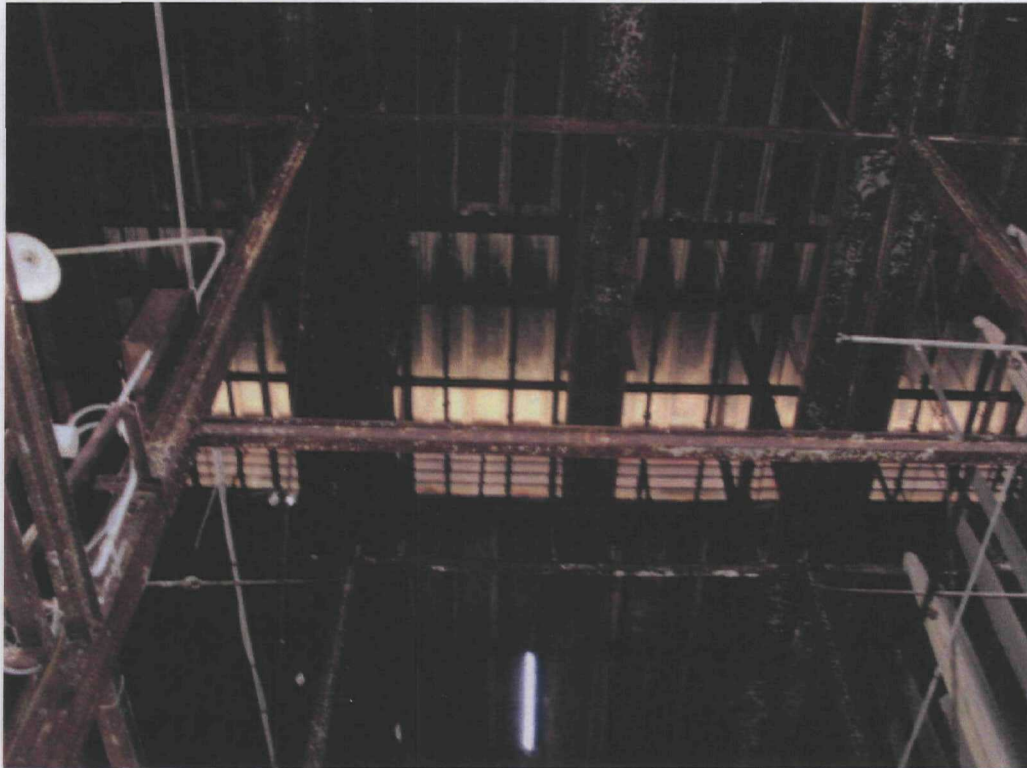
**Photo 8:** Exterior of Building D (looking west)



**Photo 9:** Interior of Building D (looking south)



**Photo 10:** Interior of Building D (underneath Photo 9 looking south)



**Photo 11:** Structural steel within Building D



**Photo 12:** Equipment within Building D



**Photo 13:** Exterior of north-west wing of Building D (looking south)



**Photo 14:** Exterior of north-west wing of Building D (looking south-west)



**Photo 15:** Interior of north-west wing of Building D



**Photo 16:** Interior of north-west wing of Building D (looking west)



**Photo 17:** Interior of north-west wing of Building D (looking east)



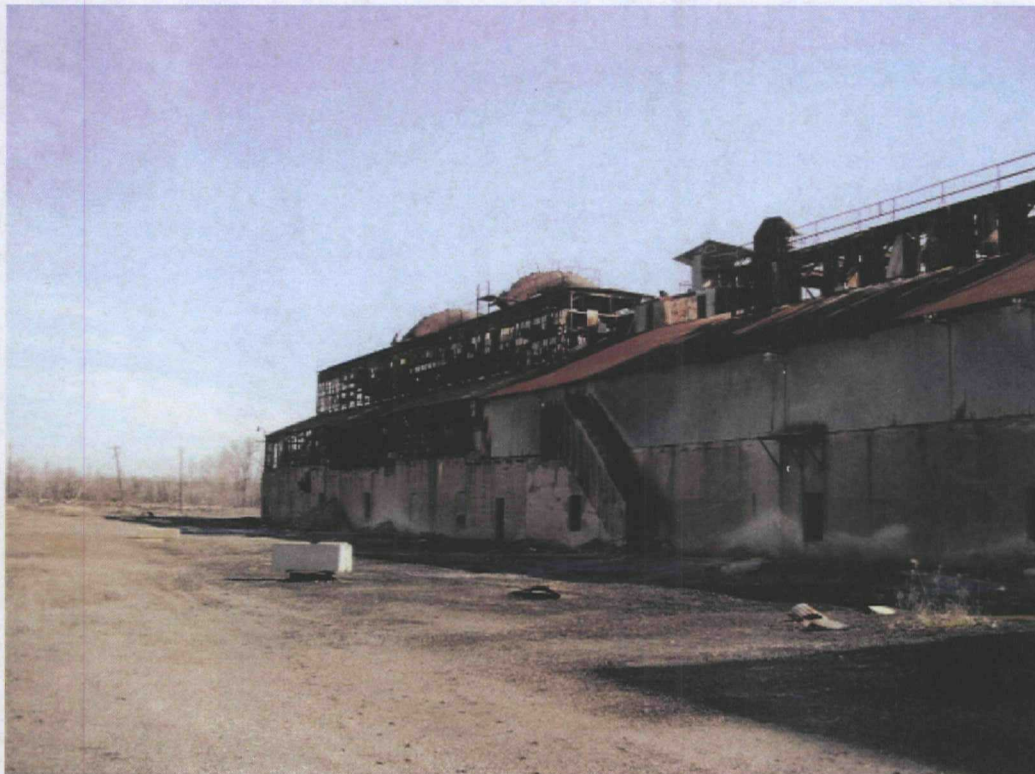
**Photo 18:** Equipment in southern part of north-west wing of Building D



**Photo 19:** Exterior of north-west wing of Building D (looking west)



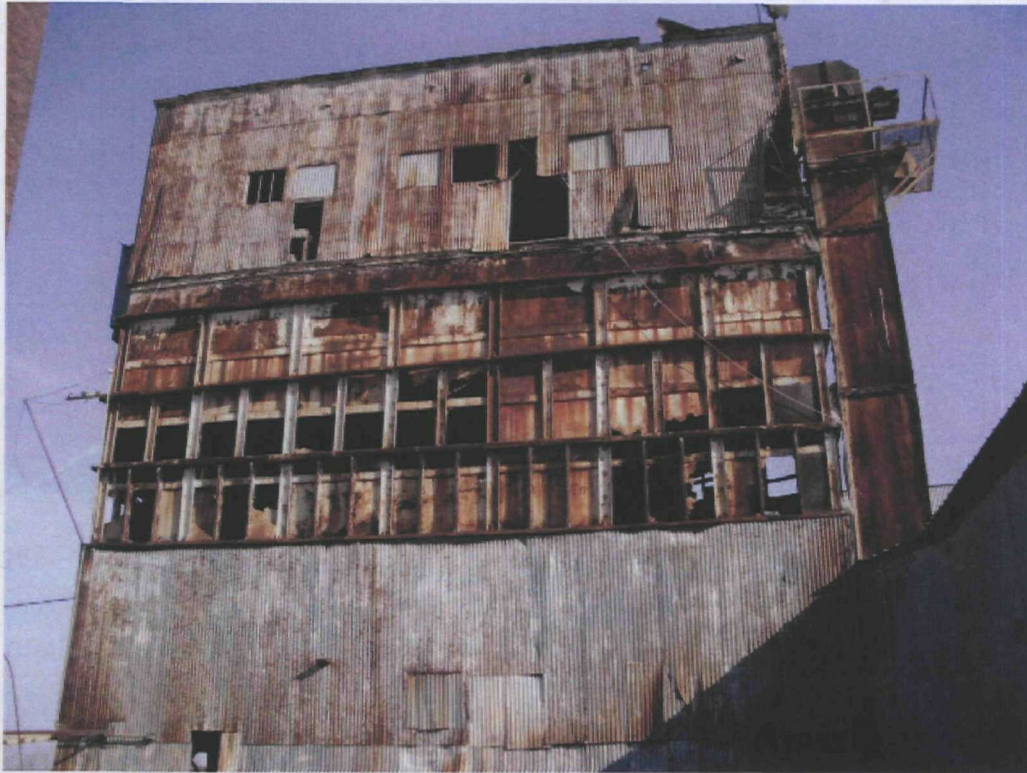
**Photo 20:** Exterior of Building E (looking northeast)



**Photo 21:** Exterior of Building E (looking northeast)



**Photo 22:** Exterior of Building E (looking west)



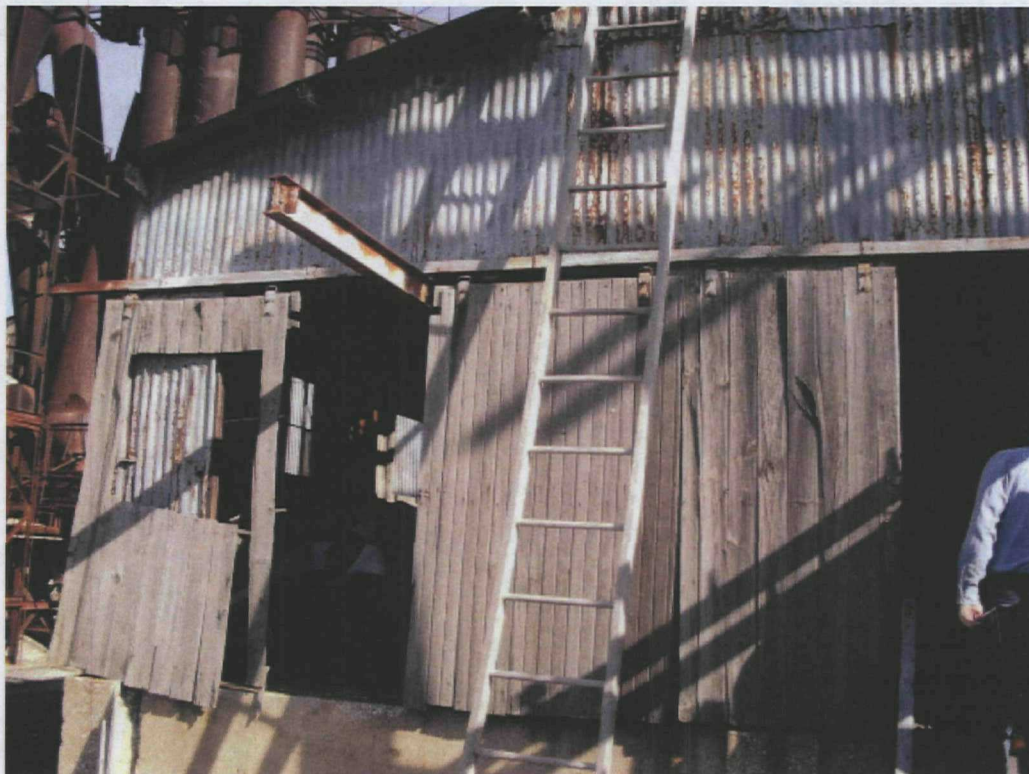
**Photo 23:** Exterior of Building E (looking north)



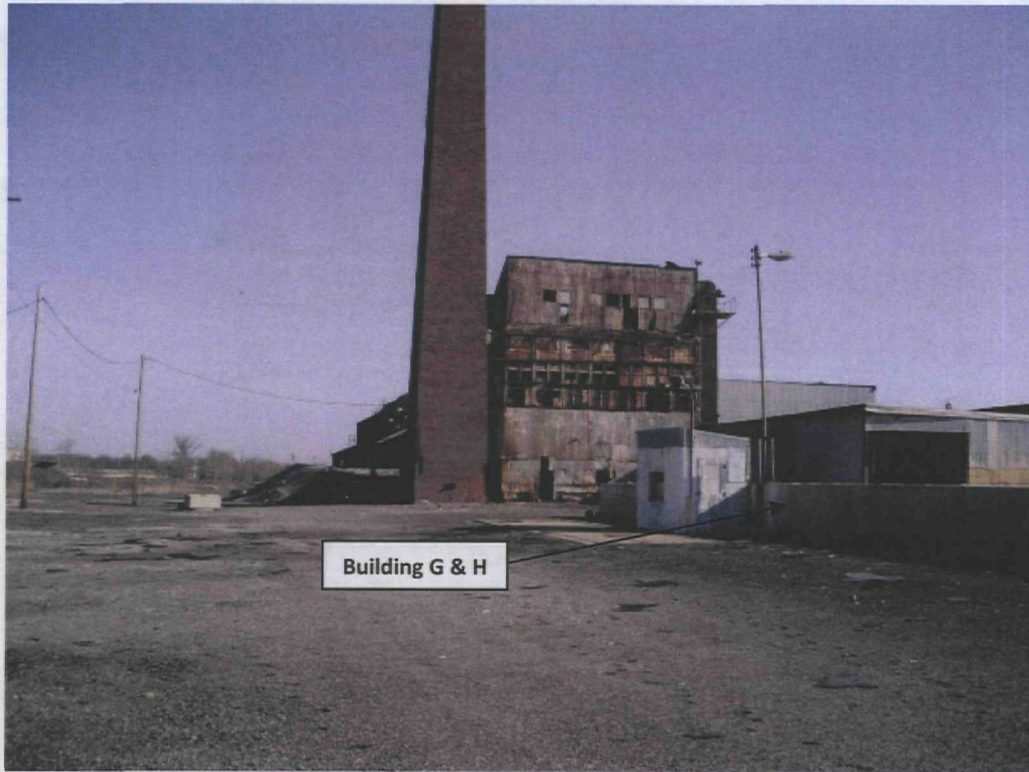
**Photo 24:** Interior of Building E (looking north)



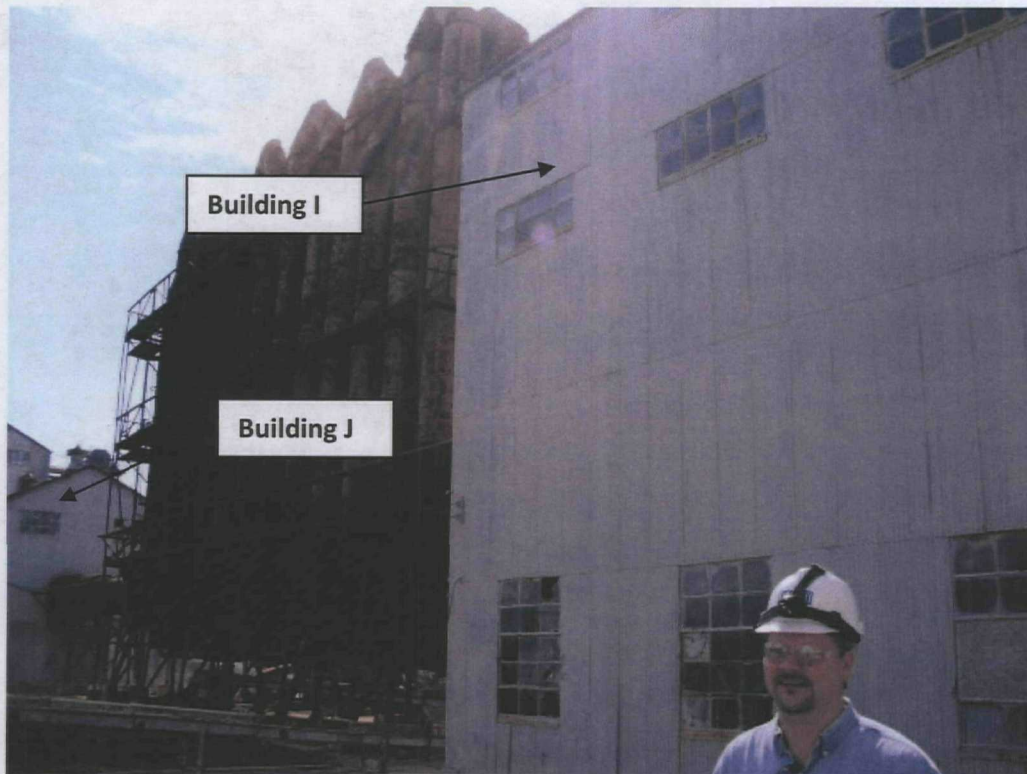
**Photo 25:** Interior of Building E (looking north)



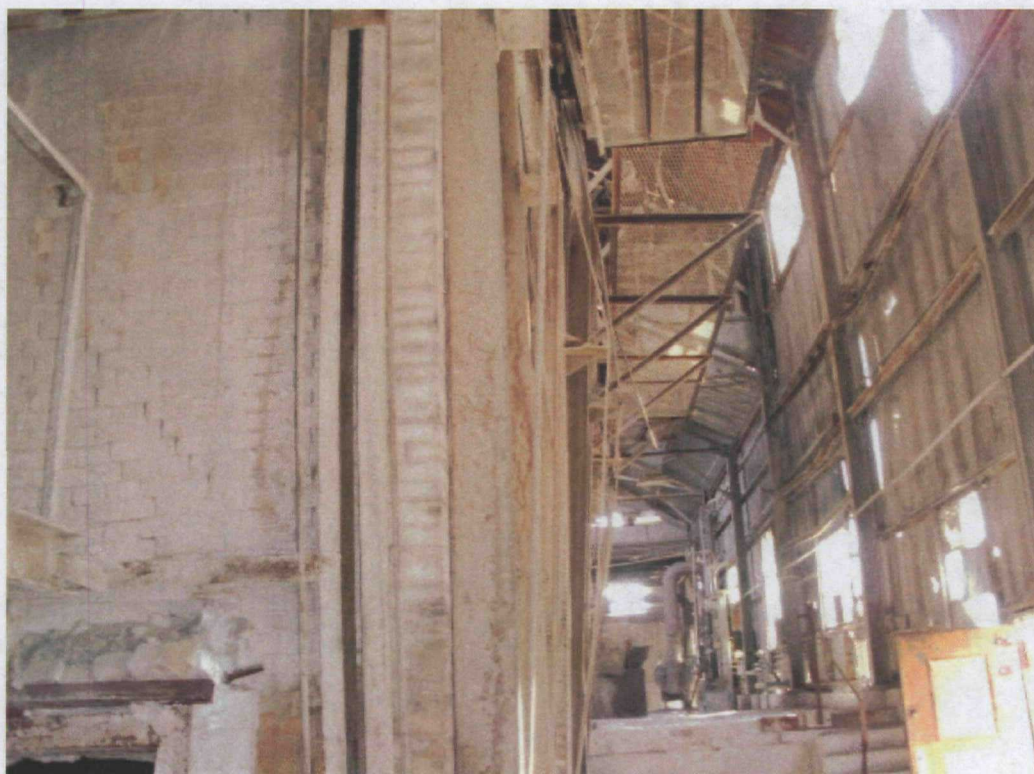
**Photo 26:** Exterior of Building F (looking north)



**Photo 27:** Exterior of Buildings G & H (looking northeast)



**Photo 28:** Exterior of Buildings I and J (looking southeast)



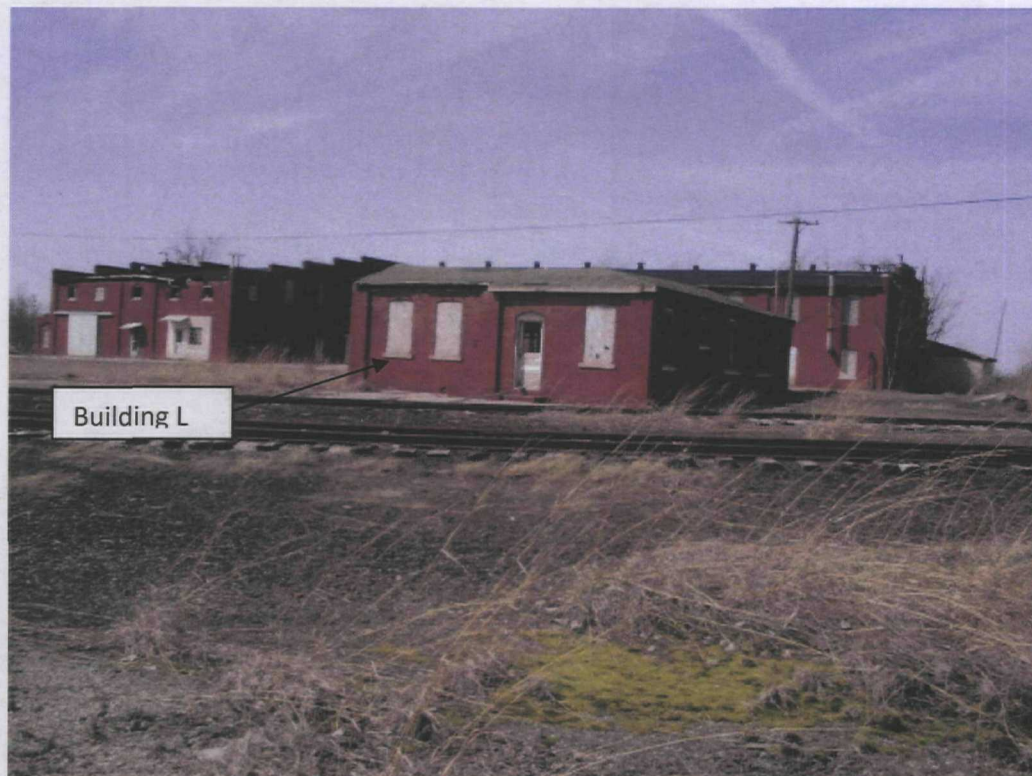
**Photo 29:** Interior of Building J (looking east)



**Photo 30:** Exterior of Building K (looking northwest)



**Photo 31:** Interior of Building K (looking north)



**Photo 32:** Exterior of Building L (looking southwest)



**Photo 33:** Exterior of Building M (looking west)



**Photo 34:** Exterior of Building M (looking north)



**Photo 35:** Interior of Building M (looking north-north-east)



**Photo 36:** Interior of Building M (looking east)



**Photo 37:** Exterior of Building N (looking northeast)



**Photo 38:** Interior of Building N (looking north)



**Photo 39:** Exterior of Building 0 (looking west)



**Photo 40:** Interior of Building 0 (looking east)



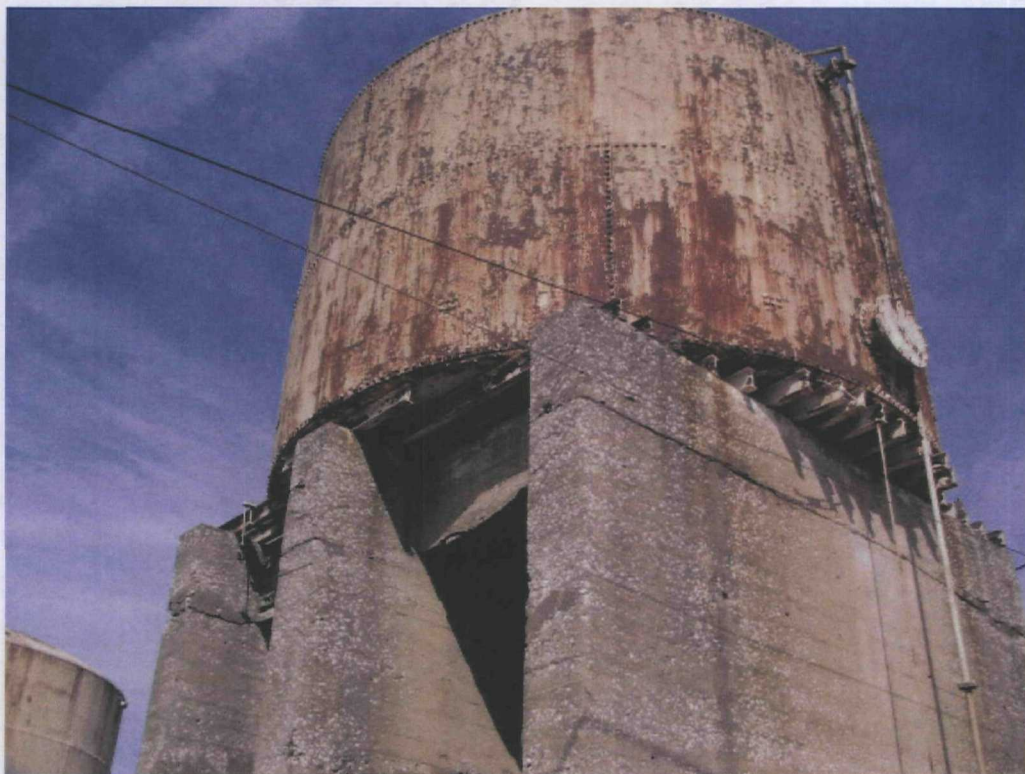
**Photo 41:** Exterior of Building P (looking southwest)



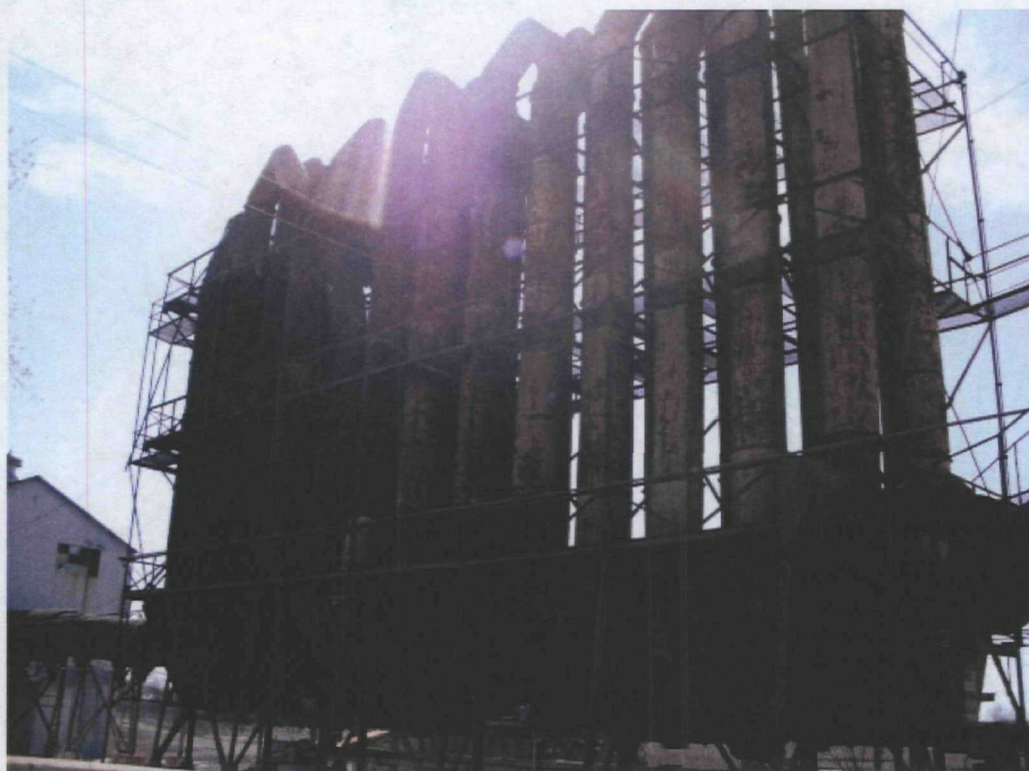
**Photo 42:** Exterior of Building P (looking north)



**Photo 43:** Two ASTs on concrete foundations.



**Photo 44:** Close-up of one AST on concrete foundation.



**Photo 45:** Cooling Tower



**Photo 46:** Site Duct Conveyor between Main Rotary Kiln Building and Fan Buildings



**BASIS OF DESIGN FOR THE ONSITE MANAGEMENT CELL**

**EAGLE ZINC SITE OPERABLE UNIT 1**

**Hillsboro, Illinois**

**Remedial Design**

**WA No. 101-RDRD-B5Y7 / Contract No. EP-S5-06-01**

**June 2011**

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# Acronyms and Abbreviations

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CQP	Construction Quality Plan
OU	operable unit
RCRA	Resource Conservation and Recovery Act
RD	remedial design
ROD	Record of Decision
TR-55	Natural Resources Conservation Service Technical Release 55
USEPA	United States Environmental Protection Agency

# Introduction

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## 1.1 Purpose and Scope

This report describes the assumptions and guidelines underlying the proposed remedial design (RD) as defined in the Record of Decision (ROD) issued on September 16, 2009, *Preliminary Remedial Design for the Eagle Zinc Site Operable Unit 1 (OU1) Temporary Landfill Cover, Montgomery County, Illinois*, performed by CH2M HILL for the United States Environmental Protection Agency (USEPA). The RD was prepared in accordance with USEPA Work Assignment No. 101-RDRD-B5Y7 under Contract No. EP-S5-06-01.

## 1.2 Site Background

The Eagle Zinc Site is located in the northeast sector of Hillsboro, Illinois, approximately 50 miles northeast of St. Louis, Missouri. The site is mixed commercial/industrial/residential area. The site is 132 acres with about 30 acres of buildings and associated structures. There are approximately 23 buildings onsite that were previously used for facility operations. The types of buildings include offices, laboratories, manufacturing/processing, equipment/raw material/finished product storage, bag houses, and maintenance facilities. Also located on the site are railroad spurs, raw material and residual material, two stormwater retention ponds, a small pond, and several roads. The site was historically used for oxide production, zinc smelting, and related operations for about 90 years, until 2003. The area has been zoned commercial/industrial, and there are no plans to rezone the area for other uses. The site has been divided into two operable units (OUs): OU1 addresses the interim remedial action concerning the contaminated buildings, while OU2 addresses the contamination at the entire site (USEPA 2009). OU1 is the focus of this RD.

Previous investigations have taken place since the early 1980s. The initial remedial investigation started in 2001, and a draft remedial investigation report was produced in 2005. The previous investigations show multiple residue piles throughout the site that exceed screening levels. The contaminants of concern onsite include lead and cadmium. Other contaminants onsite include copper, zinc, and manganese. In 2008, the buildings and associated structures onsite were sampled by x-ray fluorescence and revealed significantly high levels of lead concentrations in, on, and around the building structures. The sampling event led to USEPA's decision to complete an interim action to address the immediate threat posed by the buildings. A removal action was conducted in January 2009 to quickly mitigate site access and exposure, and consisted of fence installation around the most accessible areas of the site.

## 1.3 Summary of the Selected Remedy

The preferred remedy presented in the interim ROD (USEPA 2009) consists of the following elements:

- **Building Demolition**—The demolition of all buildings onsite, including manufacturing buildings, office buildings, and laboratories.
- **Offsite Disposal of Asbestos-Containing Materials and Putrescible Wastes**—Proper offsite disposal of asbestos-containing materials and putrescible wastes.
- **Recycling**—Recycling of steel, metal, bricks, and other recyclable materials. Any material eligible for recycling will be decontaminated to a level of contamination acceptable to the recycling facility.
- **Onsite Management Cell with Soil Cover**—Consolidation of demolition debris, and a 1-foot soil cover will be placed onsite to temporarily manage the consolidated debris. The vegetative portion of the soil cover will use native grasses, which will require limited maintenance.
- **Management of Wastes**—Nonhazardous waste will be managed onsite under the 1-foot soil cover. Any hazardous waste will be placed onsite and will be managed consistently with Resource Conservation and Recovery Act (RCRA) waste pile requirements and incorporated into the final remedial action.

The final remedial action at the site will address remaining media and will be addressed under OU2 of the Eagle Zinc Site.

The onsite management cell will consist of all remaining debris and will be located in the southwest corner of the site as shown on Sheet 3 of the drawings (Appendix B). The cell will be approximately 0.8 acre in size (180 feet by 450 feet) with a maximum waste height of 8 feet for the anticipated 11,200 cubic yards of waste; however, the cell shown on the drawings can accommodate up to 12,765 cubic yards (not including soil cover). The cell will be located approximately 75 feet north of the southern boundary of the site.

A soil cover will be placed on top of the debris. Prior to the placement of the cover soils, 1-foot of leveling material will be used to create a proper sub-grade to place the soil cover and fill the void space in the waste. The soil cover will include a 6-inch low-permeability clay layer and 6-inch soil/vegetative layer. The vegetative layer will be made up of clean soils capable of maintaining native vegetation. The soil cover will act as a physical barrier to the contaminated debris left onsite. No RCRA hazardous waste will be placed in the management cell. The soil cover will prevent direct contact and will limit potential for infiltration and leaching of lead from the material for the time it is staged prior to implementation of the final remedy.

Limited maintenance will be associated with the soil cover. The maintenance will include 6 annual maintenance events over the course of 5 years or until the final remedial action begins.

## 1.4 Future Land Use

The site has been zoned industrial/commercial by the city of Hillsboro, and deed restrictions on the property limit the site to industrial and commercial purposes in the future. The deed

restrictions also prohibit interference with USEPA-selected remedial actions for the site. Local authorities have expressed significant interest in redeveloping the site for commercial/industrial use. Land surrounding the property consists of recreational and residential land use and such land uses are not anticipated to change.

## SECTION 2

# Final Remedial Design

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The designed soil cover for the 0.8-acre management cell will be protective of humans and the environment in combination with the other RD elements. The cell has been sized to handle up to 12,765 cubic yards of waste.

## 2.1 Soil Cover

One foot of soil cover is required in accordance with the ROD. Three basic components, discussed in the following subsections, will be included in the soil cover.

### 2.1.1 Leveling Material

Onsite material will be used to construct the leveling material layer, which provides a subgrade for which to construct the low-permeability soil layer as well as fill the void space created in the placement of the waste debris. The material will be comprised of onsite slag and smelter materials. The material will be placed with tracked construction equipment and graded accordingly as shown in the sections on Sheet 7 of the drawings (Appendix B). No stakeout plan was provided due to the unknown volume of waste to be placed in the cell.

### 2.1.2 Low-Permeability Soil Layer

A minimum 6-inch low-permeability soil layer will be constructed on top of the prepared leveling layer. The layer must be placed and compacted to 95 percent compaction at optimum moisture content or wetter as determined by a standard Proctor (American Society for Testing and Materials D698) and achieve a hydraulic conductivity no greater than  $1 \times 10^{-5}$  centimeters per second. The low-permeability soil layer will be constructed to the design grades shown in the sections on Sheet 7 of the drawings (Appendix B).

No stakeout plan was provided because of the likely possibility of an increase or decrease in the estimated volume of waste to be placed in the cell; however, perimeter boundary survey control and control points along the central ridges of the cell were provided and are subject to change with adjustments in waste volume.

### 2.1.3 Vegetative Soil Layer

The top 6 inches of soil cover will consist of a vegetative soil or topsoil layer. The layer stores moisture for vegetation, prevents erosion, and is a protective layer for the low-permeability soil layer. The vegetative soil layer will have an organic content of 3 percent and a pH of 7 (plus or minus 1) in accordance with technical specification Section 31 23 23 (Appendix C). The vegetative soil layer will be seeded in accordance with technical specification Section 01 57 13 – Temporary Erosion and Sediment Control, Part 2, Permanent Seed (Appendix C). Permanent seed will consist of 75 percent Kentucky 31 and 25 percent annual ryegrass.

## 2.2 Slopes

The slopes shown on the final cover grading plans are based on a maximum 5:1 horizontal to vertical (5H:1V) slope and a minimum 5 percent slope. The onsite management cell is set forth in the decision documents to accommodate approximately 11,200 cubic yards of waste. The cell shown in the documents can accommodate approximately 12,765 cubic yards. The design presented for the cell in the final documents may be adjusted to allow for additional waste or to be modified to accommodate a lesser volume of wastes. Slopes may be increased to 4H:1V to accommodate the increase in volume or may be decreased if the volume is not needed. The footprint or overall perimeter may be decreased if a lesser air space for waste is needed.

## 2.3 Stormwater Management

The Eagle Zinc Site currently has four surface water ponds. A southwestern stormwater retention pond, two engineered stormwater retention ponds located near the eastern site property boundary, and a small pond located in the southeastern part of the site. The southwestern stormwater retention pond receives a large proportion of the site's stormwater runoff. Stormwater intermittently discharges westward from the pond to a drainage swale, which in turn discharges to an unnamed tributary of the Middle Fork of Shoal Creek. The outfall was previously permitted with the Illinois Environmental Protection Agency Division of Water Pollution Control as National Pollutant Discharge Elimination System Outfall 001. The Middle Fork of Shoal Creek flows southwestward and joins Shoal Creek approximately 6 miles southwest of the site.

Stormwater that originates in most of the manufacturing areas and the eastern part of the site enters an engineered stormwater retention system located near the eastern property boundary. The stormwater normally evaporates from the retention system; however, periodically, stormwater discharges from the retention pond to a drainage swale that channels the stormwater off the site property to the east.

The southeastern pond is located between two railroad spurs near the entrance to the plant. The pond does not appear to receive water runoff and has no inlet or outlet. In addition, stormwater that collects in a limited area along the southern site boundary discharges to a small stream located south of the site.

Stormwater runoff – overland flow – from the newly constructed temporary soil cover will exit the cover surface by sheet flow and drain to the ditch on the south portion of the site and travel westward. With the addition of the onsite management cell and the new surface water ditch, the overall flow to this ditch, post-development, has been calculated to be less than the predevelopment flow to the existing ditch.

## 2.4 Construction Quality Plan

The Construction Quality Plan (CQP) establishes the guidelines and requirements to be used for project delivery to meet client objectives and achieve CH2M HILL standards. The primary objective of the CQP is to document requirements, procedures, and methodology for quality assurance and control during construction of the remedial action. The CQP is included as Appendix A.

## 2.5 Design Drawings

Appendix B contains the design drawings for the Eagle Zinc Site.

## 2.6 Technical Specifications

Technical specifications were prepared for the remedial action for the demolition and temporary soil cover construction at the Eagle Zinc Site and are included in Appendix C.

## 2.7 Erosion and Sediment Control

Erosion and sediment controls will comply with applicable local and State of Illinois requirements. A discussion of temporary and permanent erosion and sediment controls is presented in the following subsections.

### 2.7.1 Temporary Erosion and Sediment Controls

During construction, the erosion and sediment control will be accomplished by installing silt fences and check dams downstream of the construction areas as indicated in the drawings on Sheet 4 (Appendix B). Proper grading of borrow areas will be completed to keep surface water from leaving the work area outside of the designated pathways. Borrow areas will be selected once the remedial action commences and nonhazardous materials are identified.

#### Landfill Cover

After the vegetative layer of the soil cover is installed and seeded, straw mulch will be applied at a rate of 3 tons per acre as a temporary erosion control measure. The straw mulch will be crimped in order to prevent it from becoming windblown.

#### Slopes

All side slopes of the landfills will be less than 5H:1V unless waste volumes increase, then 4H:1V slopes may be used. Temporary erosion control matting for protection against erosion must be used until the vegetation is established. The erosion control matting will be secured in place using nonmetallic anchoring devices as shown on Sheet 8 of the drawings (Appendix B).

### 2.7.2 Permanent Erosion and Sediment Controls

The permanent erosion and sediment controls include vegetation of landfill cover and slopes and operation and maintenance of vegetation to minimize erosion. A ditch is designed for the southern portion of the landfill management cell, as indicated on Sheet 4 of the drawings (Appendix B), and is further outlined below. Stormwater calculations per the Natural Resources Conservation Service Technical Release 55 (TR-55) Method are included in Appendix D. The calculations show that post-development flow offsite will be less than the current predevelopment runoff patterns that currently exist.

**TABLE 2-1**  
24-Hour Rainfall Totals

Recurrence Interval (years)	24-hour Rainfall (inches)
2	3.25
5	4.00
10	5.00
25	6.00
50	6.50
100	8.00

The Eagle Zinc management cell is located in Hillsboro, Illinois, which is in Montgomery County. *Rainfall Frequency Atlas of the Midwest* (Huff and

Angel 1992), commonly known as Bulletin 71, was used to determine the 25-year, 24-hour rainfall total for the site. Various 24-hour rainfall events are summarized in Table 2-1.

The TR-55 Method was used to estimate the 25-year, 24-hour peak runoff. Site runoff was evaluated for the following three conditions:

- **Existing Management Cell Conditions.** The existing site is covered in slag and estimated to have an average slope of 10 percent. Slag was represented as bare soil in Hydrologic Soil Group C for runoff calculation purposes.
- **Proposed Management Cell Conditions.** The proposed condition of the site will be uniform grading with an average slope of approximately 10 percent, covered in grass, which was represented as open space with over 75 percent grass cover in good condition, Hydrologic Soil Group C for runoff calculation purposes.
- **Area Tributary to Proposed South Ditch.** It was determined that a ditch is needed south of the site. Some offsite area, currently slag-covered, will also be tributary to the proposed ditch. Approximately 30 percent of the area tributary to the ditch is the remediated site, while 70 percent is offsite and covered in slag.

Table 2-2 summarizes runoff calculation parameters and 25-year, 24-hour results.

**TABLE 2-2**  
25-year, 24-Hour Runoff Summary

Condition	Curve Number	Time of Concentration (hour)	Area (acres)	Peak Flow (ft <sup>3</sup> /second)
Existing Cell Area	91	0.08	0.75	5.81
Proposed Management Cell	74	0.11	0.75	3.68
Proposed Ditch Tributary Area	86	0.14	2.0	11.99

ft<sup>3</sup>/second = cubic feet per second

The proposed ditch is conceptually sized for the 25-year storm event with adequate freeboard to convey the 50-year storm event. This is a preliminary design, using existing grade slopes to estimate the slope of the proposed ditch, which could be fairly steep at 2.5 percent. The calculations should be revisited as construction progresses because the current conceptual design produces fairly high velocities and stabilization by use of erosion mating and check dams will be required as shown on Sheet 4 of the drawings (Appendix B). A summary of the ditch design is outlined in Table 2-3.

**TABLE 2-3**  
Proposed Ditch Design Summary

Parameter	Value
Side Slopes	2:1
Bottom Width	1.0 foot
Bottom Slope	2.5%
Manning's n	0.025
Design Flow at a Depth of 1.0 foot	19 ft <sup>3</sup> /second
Velocity at Design Flow	6.3 feet per second
Shear Stress	1.56 pounds per square foot

## SECTION 3

# Cost Estimate

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A cost estimate for construction and implementation of the selected remedy for the demolition and construction of the waste management cell is included in Appendix E.

The estimated cost for the activities is \$6,202,205, which includes removal and disposal of the excavated confined disposal facility material offsite to an approved nonhazardous landfill facility. Details of the cost estimate and a compensation schedule are provided in Appendix E. Cost estimate assumptions are based on the best available information regarding the anticipated scope of work, previous experience, and general site knowledge. Changes in the cost elements are likely to occur as a result of new information and design results. The cost estimate is considered a Class 1 and is an order-of-magnitude cost estimate that is expected to be within +15 to -10 percent of the actual project costs. The cost estimate is offered as an opinion of cost to perform the work and is not an offer to contract for construction services, procure, and/or provide such services.

#### SECTION 4

## References

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Huff, Floyd A. and Angel, James. 1992. *Rainfall Frequency Atlas of the Midwest*. Bulletin 71. Midwest Climate Center Research Report 92-03.

USEPA. 2009. *Interim Record of Decision for the Eagle Zinc Site, Operable Unit 1: Building Demolition*.

## **Appendix A**

### **Construction Quality Plan**

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**CONSTRUCTION QUALITY PLAN  
CONSOLIDATION CELL CONSTRUCTION AND  
BUILDING DECONTAMINATION AND DEMOLITION**

**EAGLE ZINC SITE OPERABLE UNIT 1  
Hillsboro, Illinois**

**Remedial Design**

**WA No. 101-RDRD-B5Y7 / Contract No. EP-S5-06-01**

**June 2011**

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# Acronyms and Abbreviations

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ASTM	American Society for Testing and Materials
CCI	CH2M HILL Constructors, Inc.
CQP	Construction Quality Plan
ESBG	Environmental Business Group
HASP	Health and Safety Plan
QA/QC	quality assurance/quality control
RFI	Requests for Information
USEPA	United States Environmental Protection Agency

# Introduction

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## 1.1 Purpose and Objective

This Construction Quality Plan (CQP) establishes project control procedures and presents programs used to ensure the highest quality of product and service is delivered to the owner. It establishes guidelines for reviewing procedures and deliverables, identifying and resolving potential issues prior to impacting project objectives, and determining the most efficient ways to correct these issues. This CQP focuses on the construction of an onsite consolidation cell and the decontamination and demolition the buildings at the Eagle Zinc Site Operable Unit 1 in Hillsboro, Illinois, and is prepared in accordance with United States Environmental Protection Agency (USEPA) Work Assignment No. 101-RDRD-B5Y7 under Contract No. EP-S5-06-01. These procedures and processes are derived from the Construction Quality Management Manual and CH2M HILL's core quality standards.

The purpose of this CQP is to establish and implement the following quality assurance/quality control (QA/QC) elements for the project:

- QC organization and responsibilities
- Training and qualification of project personnel, including subcontractors
- Inspections
- Monitoring tests and observations
- Calibration and maintenance
- Data quality
- Submittal review and approval
- QC documentation
- Change control
- Noncompliance and corrective actions
- Document and technical reviews
- Project communications

The strategy of the CQP is to use a proactive approach to identifying engineering quality in the critical work elements of the project prior to implementation and during construction. The contractor will use internal experts to ensure critical work elements of the project are identified and the proper quality control procedures are established. The contractor will also consult with the project stakeholders such as USEPA and oversight contractor to assure all requirements and expectations for the project are met. The contractor will use communication vehicles such as weekly or monthly meetings, telephone or video conferences, and e-mail to discuss and resolve issues related to the successful implementation of the project.

The overall project objective is to construct an onsite consolidation cell and to decontaminate and demolish the buildings in a safe, cost-effective, and environmentally safe manner. When

this document references CH2M HILL, it should be construed to mean CH2M HILL and its Subcontractors as their respective trade may apply to the subject being discussed.

## **1.2 Definable Features of Work**

A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. The CQP outlines the quality control requirements applicable to perform the definable feature of work activities for this project, which include:

- Project management/site management/health and safety
- Mobilization/site preparation/site controls/demobilization
- Site clearing and grubbing
- Subgrade Preparation
- Low-permeability Soil Placement
- Vegetative Cover Soil Placement
- Seeding and Site Restoration
- Utility Terminations
- Asbestos Abatement
- Universal Waste Abatement
- Building Demolition
- Material Management
- Transportation and Disposal
- Demobilization and construction completion reporting.

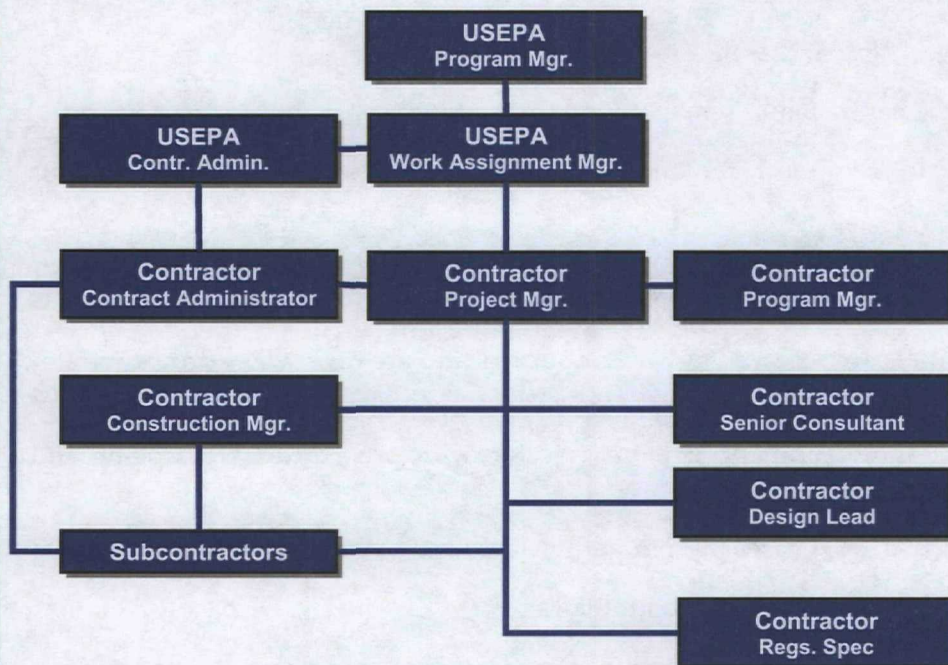
These activities will be performed in accordance with the respective Subcontractor's statement of work, project planning documents and the Project Management Work Plan. All submittals will have been reviewed/approved by CH2M HILL before mobilization and should be onsite at all times for reference.

## SECTION 2

# Organization and Responsibilities

The overall responsibility for implementation and enforcement of the CQP is assigned to the project manager. The project quality manager will assume execution responsibility of this plan. The program QA/QC manager is responsible for quality assurance and verification of the effectiveness of the program and project quality control.

**FIGURE 2-1**  
Organization Chart



## 2.1 Responsibility and Authority

The responsibilities of the key members in the project organization are detailed below.

### 2.1.1 Owner

USEPA is the owner of the project. The owner is responsible for the overall design, construction, and closure of the site. The owner has the authority to complete the following actions:

- Select and dismiss organizations charged with design, quality assurance, and construction activities.
- Accept, reject, or modify design plans and specifications.

- Accept, reject, or modify the CQP and reports.
- Accept or reject the materials and workmanship of the construction subcontractors.

### **2.1.2 Project Manager**

The project manager is responsible for the overall execution of the project. The project manager will interact and communicate directly with USEPA and the project team regularly throughout the duration of the remedial design/remedial action to ensure the contract and performance objectives are met. The project manager ultimately is accountable for the work activities undertaken on the project. As such, the project manager will provide the managerial administrative skills to ensure that resource allocations, planning, execution, and reporting meet expectations and contract requirements. Specifically, the project manager will do the following:

- Organize project staff and assign responsibilities.
- Understand the contract and scope of work.
- Communicate to the project staff and subcontractors regarding owner requirements and QA/QC practices.
- Identify and provide documentation, and notify the owner and project team of changes in the scope of work, project documentation, and activities.
- Ensure submittals are received by Subcontractors and are reviewed by appropriate personnel
- Supervise preparation and approval of project-specific procedures, work plans, and quality assurance project plans.
- Approve project design bases, design parameters, drawings, and reports.
- Approve project construction methodologies.
- Disseminate project-related information from the owner such as design bases, input parameters, and drawings.
- Serve as liaison for communications with the owner and subcontractors.
- Serve as liaison between the project staff and other internal and external groups.
- Determine whether drawings require independent review.
- Investigate nonconformance and implementation of corrective actions.
- Evaluate the effect of nonconformance on the project for reporting such items to the owner, and provide appropriate documentation for reporting.
- Determine that changes, revisions, and rework items are subject to the same QC requirements as the original work.
- Serve as final reviewer prior to release of project information.

- Approve and sign outgoing correspondence.
- Coordinate and attend the project kickoff meeting, preconstruction meeting, and regular project status meetings.
- Attend partnering meetings and public/regulatory meetings.

This list is not meant to be all-inclusive and the project manager may assign some of these responsibilities to the construction manager, who will remain onsite throughout the project field activities.

### **2.1.3 Construction Manager**

The construction manager is responsible to the project manager for efficiently applying the resources of the project team to execute construction. In addition, the construction manager is responsible for the technical, personnel, construction methodology, quality, safety, and local client interface details of the project and the project team while mobilized to the site. The construction manager will assist the project manager to ensure that sufficient resource allocations to maintain project schedule and budget are maintained and provide daily feedback to the project manager on project progress, issues requiring resolution, and other project specific issues, as required.

The quality-related responsibilities of the construction manager and site superintendent include, but are not limited to, the following:

- Notifies the project manager if the project cannot be completed with regard to quality, schedule, or cost.
- Provides oversight and control of subcontractor services.
- Organize and set up temporary facilities and storage yards for the entire project.
- Ensure the site is constructed in accordance with the construction drawings and technical specifications.
- Monitor the construction productivity in relation to construction schedules and technical specifications.
- Serves as liaison for communications with project staff and subcontractors, as well as with the onsite client representatives.
- Advise the project manager and owner of changed conditions, nonconformance, and requirements for field changes.
- Coordinate daily health and safety tailgate meetings.
- Attend kickoff, preconstruction, and progress status meetings.
- Support and enforce health and safety requirements throughout the entire project.
- Maintain field logs and daily reporting, including relevant photographs and all pertinent events.
- Review and recommend action on value engineering change proposals.

- Review and recommend changes.
- Prepare and submit Requests for Information (RFIs) and routes them to the project manager and Technical Consultant for review and approval.
- Advise on need and cost of proposed change orders.
- Assist in prevention and resolution of subcontractor claims.
- Recommend approval or rejection of construction schedules.
- Ensure subcontractors are set up for success in schedule and compliance.
- Continuously monitor work progress, quality, safety, and adherence to authorized work scopes, budgets, and schedules.
- Interface daily with the subcontractors.

### **2.1.4 Project QC Manager**

The project QC manager is responsible for the execution of this project CQP and communicates the onsite QC program policies, objectives and procedures to the project personnel and subcontractors during project meetings and informal discussions. Onsite technical personnel, who may include QC inspectors, engineers, chemists, hydrogeologists, and scientists, will assist the QC manager in monitoring, controlling, and documenting the quality of the onsite construction and survey activities. Documentation related project quality control, including analytical test results, inspections, material test results, and audits will be reviewed or prepared by the project QC manager. The project QC manager responsibilities include, but are not limited to, the following:

- Construction quality control inspections and testing of materials and workmanship
- Control testing
- Document control
- Review of submittals
- Administering RFIs
- Completion inspection
- Records
- Audits and surveillance

The project QC manager will also coordinate with and assist the client representative in the performance of QA/QC audits and inspections.

The project QC manager or a representation will have the authority to stop project work because of nonconformance with the CQP. Onsite personnel will be encouraged to discuss concerns with the project QC manager and supporting technical personnel. If the project QC manager is informed of and/or detects an incident of project nonconformance, the project QC manager will perform an initial investigation, evaluate the course of corrective action required, document the incident, and report the incident to the project manager. If the project QC manager is not satisfied with the resolution of the nonconformance, the project QC manager will contact the program QA/QC manager.

### **2.1.5 Design Manager**

The design manager's primary responsibility is to design the temporary cover and building decontamination/demolition to fulfill the requirements of the record of decision. Design-related activities may not end until construction is complete. The design manager is responsible for the following activities during the project execution:

- Review and approve construction plans (design drawings) and specifications.
- Clarify or interpret requirements of the plans and specifications.
- Review requests for design changes during construction, RFIs, and provide response(s) when necessary.
- Prepare design changes to account for unexpected site conditions or changes in construction and operation methodology.
- Review and approve shop drawings and submittals from subcontractors and vendors.
- Interact with construction team on problem solving and solutions.
- Observe construction of critical design features.
- Provide overall input regarding the impact of scope changes on other portions of the work.
- Modify or change the final plans for as-built record drawings.

### **2.1.6 Waste Management Coordinator / Regulatory Management**

The waste management coordinator/regulatory manager will provide regulatory compliance and waste management coordination and expertise. The roles and responsibility associated with this position will include preparing and collecting all required waste management and tracking documentation including waste manifests, bill of lading, weight tickets, hazardous waste labels, etc. The waste management coordinator will coordinate with Sasol North America for all generator signatures required.

### **2.1.7 Health and Safety Manager**

The health and safety manager for the project will be responsible for the Health and Safety Plan (HASP) to be supported by all site employees. Health and safety are team functions, and not only is compliance required, but excellence is expected.

### **2.1.8 Quality Assurance/Quality Control Manager**

The quality manager for the project is Steve Martz/DEN, and onsite QA/QC will be provided by Robert Custance. Steve and Robert will be responsible for implementation of the QA/QC plan. Quality is a team function, and not only is compliance required on all phases of the project, but excellence is expected. Robert will assume the responsibility to coordinate and track all waste shipments with the Subcontractors and the disposal and recycling facilities.

### **2.1.9 Document Manager**

The document manager will provide part-time assistance to the project and provide logistics support. This effort includes implementing document controls, disseminating communications, in-house document production (editing, graphics, word processing, and reproduction) and coordinating services related to printing, binding, and distributing the final reports in both hard copy and on CD and archiving the project deliverables for easy retrieval and electronic filing.

### **2.1.10 Senior Consultants**

Senior consultants will be responsible for overseeing the planning and review of the technical and operational work performed. They will work closely with the project manager and design project manager to ensure technical excellence and compliance.

### **2.1.11 Project Contract Administrator**

The contract administrator for this project will assist the team with contractual issues. The contract administrator is responsible for ensuring procurement is conducted in accordance with the CH2M HILL Constructors, Inc. (CCI) protocol for subcontracting. She will assist in evaluating subcontractors/vendors payment applications for processing. She will also be involved with any potential Change Order Management of Subcontractors/Vendors. In addition, she will ensure the potential subcontractor/vendors proposals contain appropriate rates and have adequate documentation. Subcontracting for this project is on an extremely fast-track schedule.

### **2.1.12 Project Accountant**

The project accountant will assist in matters concerning budgets, invoices, percent completes, estimates at complete, and individual project financial report formats. The project accountant is also responsible for ensuring all travel expenses are in accordance with the project budget.

### **2.1.13 Subcontractors**

It is expected the contractor will subcontract the following services during the execution of this project:

- Surveying
- Clearing, excavation, backfilling, planting of vegetation, and site restoration
- Laboratory analyses (geotechnical)
- Special inspection, observation, and testing (geotechnical)
- Building decontamination and demolition
- Material transportation and delivery/disposal

The contractor assumes the overall responsibility for conformance to the quality requirements for the subcontracted items and services. Each subcontractor will be responsible for planning, managing, and effectively executing the project activities in accordance with the appropriate documentation.

Subcontractors are responsible directly to the construction manager for completion of the portion of project activities assigned, and to the project QC manager for CQP activities. Subcontractors will verify that construction and materials used to perform the activities herein comply with the requirements of the contract plans and specifications. Subcontractors include those organizations supplying quality related items or services to the project.

## 2.2 Resolution of Conflicts

If the QC team detects a nonconforming item, the QC manager will investigate it. If the QC manager determines that additional corrective action is warranted, the QC manager will document and review the issue with the site construction manager and project manager. The QC manager has the authority to stop work on any nonconforming activity. If satisfactory resolution cannot be achieved between the QC manager and the project manager, it will be elevated to the program QA/QC manager, and if necessary, to the owner.

## SECTION 3

# Training and Qualifications

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During project team chartering, the project manager will determine the necessary staff qualifications and will review the staff training documentation (resumes, professional engineer registration, health and safety, and any other certifications) needed to complete this project. The project manager will be responsible for ensuring that each individual is qualified and has completed any necessary training for their assigned tasks. The project manager will also be responsible for determining and documenting when formal qualification or certification is required. The project manager will ensure training is completed before task initiation and the appropriate certification documents are obtained and retained as quality records in the project files.

## SECTION 4

# Communications and Meetings

Section 2 presented a project organization chart that identified lines of communications between project parties. Table 4-1 shows meetings that will be held throughout the execution of the project to ensure there is regular communication between the contractor and the owner, among project team members, and between the contractor and the subcontractors.

**TABLE 4-1**  
Project Meetings

Meeting	USEPA	Contractor				Schedule
		Project Manager	Construction Manager	Subcontractors	Project Staff	
Kickoff meeting	X	X	X	Optional		Before mobilization
Public Meeting	X	X				Before mobilization
Preconstruction meeting	Optional	X	X	X	X	Before mobilization
Public/regulatory meeting	X	X	X			If needed
Tailgate meetings	Optional	Optional	X	X	X	Before start of work each day onsite
Project status meeting	Optional	X	X	X	X	Weekly (can be by teleconference)

X = Required attendance. Optional attendance is at the discretion of the project manager or USEPA representative, depending on the relevance of the meeting

## 4.1 Kickoff Meeting

Before the site work begins, the project team will meet with the owner and stakeholders to develop a mutual understanding of the project details, including health and safety issues, communication procedures, evacuation/emergency procedures, scheduling work, security procedures, submittal reviewer/approvers, inspectors/approvers of major milestones work performed, permits required, forms to be used, administration of onsite and offsite work, signature authorities for changes and waste documentation, schedule, and method for transmitting submittals. Minutes of the meeting will be prepared by the project manager and signed by the contractor's representative, the owner's designated representatives, and the stakeholders (facility personnel, fire marshal, regulatory agencies, etc.). Meeting minutes will be distributed to the parties involved in the meeting and placed in the project files. This meeting may be held in conjunction with other meetings (for example, the preconstruction meeting).

## 4.2 Preconstruction Meeting

A preconstruction meeting with the project subcontractors is required for discussion of the administrative procedures for the project. During the conference, ground rules and

understandings are established between the contractor and its subcontractors. This meeting is also an opportunity to emphasize the importance of health and safety, quality, and regulatory compliance to the subcontractors.

The preconstruction meeting is held between the project team and subcontractors' representatives. The owner may also be present, or a separate preconstruction meeting with the owner may be conducted after the contractor has met formally with its subcontractors. The purpose of this meeting is to ensure that all parties involved in the project understand and agree on the following:

- Project scope
- Work approach, construction means, and methods
- Roles and responsibilities
- Designation of responsible personnel
- Schedule
- Submittal requirements
- Reporting and documentation requirements
- Use of the site for storage, vehicle parking, access routes, and other site requirements
- Change management processes and procedures
- Communication procedures
- Client requirements
- Health and safety requirements
- Progress schedules
- Permitting and regulatory issues
- Quality issues and reporting
- Security and housekeeping procedures
- Procedures for maintaining record documents
- Waste handling and documentation
- Testing and inspection schedule and reporting

Minutes of the meeting will be prepared by the project manager or construction manager and signed by both the contractor's and subcontractors' representatives. Copies of the minutes will be distributed to the parties from the meeting and placed in the project files.

### **4.3 Public / Regulatory Meetings**

The contractor will participate in any public/regulatory meetings for the purpose of presenting the proposed plan/record of decision for the project as needed.

### **4.4 Tailgate Meetings**

Daily tailgate meetings are held with all project personnel in attendance to review safety hazards posed and required health and safety procedures and job hazard analyses applicable to each day's activities. At the start of each day, the construction manager discusses the proposed work tasks for that day, with input from the work crew, to ensure that site workers are familiar with the proposed activities. The day's tasks, personnel, tools, and equipment that will be used to perform these tasks are reviewed, along with the hazards posed, associated

mitigations, and required health and safety procedures. These daily tailgate meetings promote worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required health and safety procedures with the crew each day.

## 4.5 Project Status Meetings

After the start of site work and throughout project execution, the project team will conduct project status meetings (sometimes referred to as a quality meeting) at least weekly during active construction. The owner's representatives and stakeholders may attend these meetings. The main purpose of the meetings is to track progress to date and to discuss progress planned over the next 2 or 3 weeks (look-ahead scheduling) in order to resolve project issues before they may occur.

At a minimum, the following will be accomplished at each meeting:

- Review the minutes of the previous meeting.
- Discuss health and safety issues.
- Review the schedule.
  - Work or testing accomplished since last meeting
  - Rework items identified since last meeting
  - Rework items completed since last meeting
  - Schedule delays and long lead time items
  - Critical milestones
- Review the status of submittals.
  - Submittals reviewed and approved since last meeting
  - Submittals required in the near future
  - RFI resolutions
- Review the work to be accomplished in the next 2 weeks and documentation required.
  - Establish completion dates for rework items
  - Inspections required
  - Testing required
  - Status of offsite work or testing
  - Documentation required
- Discuss health and safety issues (i.e., near-misses and incidents).
- Resolve QC and production problems.
- Address items that may require revising the project plans.
  - Changes in procedures
  - Changes in design/engineering drawings or specifications
- Address field change requests, design change notices, RFIs.

Meetings will be recorded in project status meeting minutes, prepared by the construction manager or QC manager. The meetings may be held in conjunction with other meetings (such as tailgate safety meetings, progress meetings, planning meetings, etc.). Meeting

minutes will be provided to the project manager and placed in the project files in addition to being forwarded to protect team members.

## SECTION 5

# Inspection Activities

The project QC manager is responsible for performing inspection activities and documenting compliance with project requirements.

## 5.1 Inspections

The QC manager's responsibilities include inspection of all equipment and materials prior to being accepted and installed at the site, and daily review of all construction activities required to complete the scope of work as identified in the final approved project plans. Inspection activities for the project that will be performed by the QC manager are identified in Table 5-1.

**TABLE 5-1**  
Project Inspection Activities by Task

Task	Inspection
<b>Mobilization</b>	<p>Ensure that preconstruction and construction QC submittals are reviewed and approved.</p> <p>Review qualifications of personnel to ensure they meet the specification and work plan requirements (certifications, licenses, etc.).</p> <p>Ensure the following are onsite before any work begins: HASP, Activity Hazard Analyses, personnel Training Certificates, subcontractor Statements of Work and compensation schedule, emergency route to hospital, emergency contact number for Bayer personnel, and Dig Safe Reference number.</p> <p>Ensure materials and equipment are received in working order and in compliance with work plans and specifications.</p> <p>Ensure materials and equipment are stored in accordance with work plans and specifications.</p> <p>Ensure adequate permits.</p> <p>Maintain construction schedule.</p> <p>Design traffic routes for compliance with work plan.</p> <p>Catch basins grates are covered with filter fabric</p> <p>Enable site security measures for compliance with work plan.</p> <p>Review layout drawings for completeness and accuracy.</p> <p>Connection of temporary facilities.</p> <p>Review staging areas for storage of wastes, recyclable materials, heavy equipment, and storage containers.</p> <p>Inspect decontamination areas to ensure they meet the requirements of the plans.</p> <p>Verify equipment condition is acceptable and that features (such as backup alarms) function properly.</p> <p>Verify personnel are properly trained and certified to perform the work.</p> <p>Ensure personnel have proper personal protective equipment to perform the work.</p> <p>Ensure work zones and signage are properly established.</p> <p>Ensure proper material safety data sheets are available onsite.</p> <p>Ensure break and rest areas are established.</p> <p>Ensure utilities are properly protected.</p>

**TABLE 5-1**  
Project Inspection Activities by Task

Task	Inspection
<b>Clearing and Grubbing</b>	<p>Ensure all topsoil and vegetative matter are removed from existing ground surface.</p> <p>Perform clearing and grubbing limits/layout.</p> <p>Ensure utility clearance.</p> <p>Perform clearing separate from grubbing when required.</p> <p>Dispose of cleared and grubbed materials.</p> <p>Ensure limited or no disturbance of adjacent areas.</p> <p>Visually characterize site for types of vegetative cover, debris, and obstructions.</p>
<b>Erosion Control</b>	<p>Receive and approve submittals.</p> <p>Confirm materials meet specifications and plans.</p> <p>Maintain site layout and drawings on hand.</p> <p>Ensure control device locations are properly laid out and marked prior to installation.</p> <p>Ensure control devices are properly installed.</p> <p>Ensure control devices are adequate to minimize run-on and runoff.</p> <p>Note and repair damaged areas in a timely manner.</p> <p>Ensure control devices are regularly maintained, cleaned, and silt removed.</p>
<b>Surveying</b>	<p>Provide surveyor qualifications/licenses.</p> <p>Establish temporary control points.</p> <p>Verify existing monuments.</p> <p>Protect monuments and control points.</p> <p>Ensure instrument calibration and accuracy.</p> <p>Survey horizontal and vertical control.</p> <p>Survey tolerances (horizontal and vertical angles).</p> <p>Reference applicable plane coordinates and vertical datum.</p> <p>Provide surveyor notes that are legible, accurate, and complete.</p> <p>Provide electronic and hard copy data deliverables.</p> <p>Ensure stake alignment and spacing intervals</p> <p>Ensure stake flagging/markings.</p> <p>Provide as-builts, drawings, and maps.</p>
<b>Material Receiving</b>	<p>Visually inspect material upon arrival to the site for damages.</p> <p>Check type and quantities of arrived materials against purchase order, shipping label, and confirmation lists. Note any incorrect quantities, incorrect type and models, and missing items.</p> <p>Visually inspect the quality of material if the material has manufacturer-specified grade or quality rating.</p> <p>Inspect and verify the received materials. Ensure they were built or manufactured in accordance to manufacturer specifications or data.</p> <p>Document and report material/product deficiencies and/or irregularities immediately to QC manager and project manager.</p> <p>Inspect the temporary storage area provided by the construction subcontractor for material storage to ensure the materials are stored in a safe, secure, and manufacturer-specified environment prior to usage in construction.</p>

**TABLE 5-1**  
Project Inspection Activities by Task

Task	Inspection
<b>Earthwork</b>	<p>Provide layout drawings.</p> <p>Ensure Unified Soil Classification System classification (soil/aggregate).</p> <p>Perform laboratory compaction characteristics.</p> <p>Perform sieve analysis.</p> <p>Perform Atterberg limits (liquid limit, plastic limit, plasticity Index).</p> <p>Report general fill condition (homogenous, no large debris or root matter).</p> <p>Ensure imported fill material chemically acceptable or certified as clean fill.</p> <p>Provide excavation methods.</p> <p>Ensure surface preparation.</p> <p>Perform material placement (lift thickness).</p> <p>Perform material compaction tests (in situ).</p> <p>Ensure adequate compaction equipment.</p> <p>Perform compaction testing.</p> <p>Perform rough grading.</p> <p>Perform finish grading/proof rolling.</p> <p>Perform survey control.</p> <p>Inspect surface water run-on, run-off control.</p> <p>Provide as-builts.</p> <p>Ensure previous surface approved.</p> <p>Ensure surface is free of ice, snow, and excessive water.</p>
<b>Utility Terminations</b>	<p>Ensure that all utilities are terminated in accordance with the project technical plan and prior to demolition.</p> <p>Ensure that the lockout/tagout of pressure and electrical utilities is performed.</p> <p>Verify that utilities are terminated in accordance with utility specifications.</p>
<b>Asbestos Abatement (to be performed by licensed asbestos inspector)</b>	<p>Verify the complete removal of asbestos containing material in accordance with the project technical plan prior to demolition activities.</p> <p>Ensure all aspects of the job (including, but not limited to removal, handling, packaging, labeling, shipping, and disposal) comply with federal, state, and local regulator requirements with regards to asbestos.</p> <p>Ensure that all practices are in compliance with the applicable asbestos regulations, including 29 CFR 1926.1101 and 40 CFR 61 Subparts A and M.</p> <p>Ensure that daily logs are maintained and will review the logs for project compliance with all applicable regulations.</p> <p>Ensure the proper preparation of the waste shipment record.</p>
<b>Demolition</b>	<p>Ensure demolition is performed in accordance with demolition work plan and HASP.</p> <p>Ensure that fencing and monitoring wells are not damaged during demolition.</p> <p>Ensure that slabs and surrounding pavement are swept clean.</p>
<b>Emissions/Dust Control</b>	<p>Ensure dust is controlled and do not exceed the action levels identified in the HASP.</p>
<b>Material Management and Staging</b>	<p>Ensure proper segregation of recyclable materials.</p> <p>Ensure demolition debris is segregated and staged in accordance with the project technical plan.</p>

**TABLE 5-1**  
Project Inspection Activities by Task

<b>Task</b>	<b>Inspection</b>
<b>Transportation and Disposal of Waste Streams</b>	<p>Ensure disposal in onsite treatment facilities is properly documented.</p> <p>Review waste documentation for accuracy and completeness.</p> <p>Inspect incoming transport containers for contamination.</p> <p>Inspect outgoing transport containers for leaks, contamination</p> <p>Obtain transportation/disposal documentation/records and track tonnage of demolition debris disposed.</p> <p>Obtain transportation/disposal documentation/records and track tonnage of materials recycled offsite.</p> <p>Maintain waste tracking log.</p>
<b>Decontamination of Equipment</b>	<p>Ensure decontamination area laid out per drawings and plans.</p> <p>Ensure proper decontamination equipment installed.</p> <p>Provide waste collection system in place and appropriate for the job.</p> <p>Provide spill prevention and recovery plan in place.</p> <p>Ensure equipment is properly decontaminated.</p> <p>Ensure sufficient equipment and supplies on hand.</p> <p>Ensure waste containers are correctly staged, labeled, and inventoried.</p>
<b>Site Restoration/Landscaping</b>	<p>Provide layout drawings.</p> <p>Provide restoration methods and limits.</p> <p>Ensure material / product quality (supplier certifications): seed, sod, sprigs, erosion control matting, mulch, fertilizer, vegetation).</p> <p>Perform surface preparation.</p> <p>Ensure topsoil suitability and placement.</p> <p>Ensure material application (casting) rates.</p> <p>Provide mulching and fertilizing.</p> <p>Perform damage (e.g., washout) Repair.</p> <p>Ensure defective material rejection.</p> <p>Ensure unused material is properly stored.</p>
<b>Demobilization/Project Closeout</b>	<p>Inspect work areas to ensure all temporary facilities, equipment and materials are safely removed from the site.</p> <p>Inspect work areas to ensure project housekeeping and cleaning.</p> <p>Provide decontamination of equipment.</p> <p>Perform completion inspection when work is substantially complete.</p> <p>Provide punch lists on outstanding items.</p> <p>Perform project housekeeping and final project cleaning.</p> <p>Perform final inspections of all work areas.</p> <p>Provide orderly site demobilization.</p> <p>Ensure collation of site records and documents.</p> <p>Transfer records and documentation to project manager.</p> <p>Ensure purchase order closeouts.</p> <p>Provide final reports and deliverables.</p>

As additional project-specific tasks are identified, this CQP will be amended to include inspections for those tasks.

## 5.2 Punch List Inspection

Punch list inspections may occur near the completion of all work or any part thereof. The QC manager will conduct an inspection of the work and develop a punch list of items that do not conform to the approved drawings and specifications. The QC manager will include in the punch list any remaining items on a "rework items list" that were not corrected before the punch list inspection. The punch list will include the estimated date by which the deficiencies will be corrected. The QC manager or staff will make follow-up inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, the contractor will notify the government that the facility is ready for prefinal inspection.

## 5.3 Prefinal Inspection

The contractor will perform a prefinal inspection to verify the facility or work area is complete and ready to be occupied. The contractor will schedule and invite members from the end user of the site to participate in the prefinal inspection. A prefinal inspection list may be developed as a result of this inspection. Each deficiency noted in the punch list will identify the applicable reference (specification paragraph, drawing number, etc.) that the deficiency stems from. The QC manager will ensure all items on this list are corrected before notifying the owner that a final inspection with the stakeholders can be scheduled. Items noted during the prefinal inspection will be corrected in a timely manner and will be accomplished within the time slated for completion of the entire work, or any particular increment thereof if the project is divided into increments by separate completion dates.

## 5.4 Final Acceptance Inspection

The QC manager, construction manager, other project management personnel, and owner representatives will be in attendance at this inspection. Other owner personnel and stakeholders may be in attendance. The owner, based upon results of the prefinal inspection, will formally schedule the final acceptance inspection. Scheduling should be coordinated with the stakeholders at least 14 days before the final inspection. A final acceptance inspection will be considered closed when the work has been accepted by USEPA and its stakeholders and that acceptance has been documented and signed by all parties.

SECTION 6

# Performance Objectives and Acceptance Criteria

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The remedial design/remedial action is to be implemented in such a manner that all work performed accomplishes the following overall performance objectives:

- Complies with federal, state, and local regulations
- Protects human health and the environment
- Provides the owner with a usable product intended to meet the project objectives
- Is cost-effective

## SECTION 7

# Testing Requirements

The QC manager is responsible for ensuring the subcontractor performs all testing required, as identified in the final approved work plans. Completion of field tests will be documented in the Testing Plan and Log (Appendix A). The QC manager will obtain all test results from the subcontractor, update the Testing Plan and Log at a minimum of once per week, and maintain the records onsite in the project files. A copy of the Testing Plan and Log will be submitted to the QC manager at the end of each month.

As project-specific tasks are identified, the Testing Plan and Log will be amended to include monitoring tests and observations for those tasks. Table 7-1 lists specific monitoring requirements and observations.

**TABLE 7-1**  
Construction Monitoring Tests and Observations by Task

Task	Monitoring Test / Observation	Frequency
Utility survey		Once
Site preparation/ construction	Erosion and Sediment Control Measures	Daily
Initial material testing	Low-Permeability Soil Atterberg Limits (ASTM D 4318)	1 per fill source
Initial material testing	Low-Permeability Soil Particle Size Analysis (ASTM D 422)	1 per fill source
Initial material testing	Low-Permeability Soil Moisture Content (ASTM D 2216)	1 per fill source
Initial material testing	Low-Permeability Soil Soil Classification (ASTM D 2487)	1 per fill source
Initial material testing	Low-Permeability Soil Permeability testing (ASTM D 5084)	1 per fill source
Initial material testing	Certification that material is free from environmental contamination	1 per fill source
Initial material testing	Low-Permeability Soil Compaction Curves (ASTM D698)	1 per fill source
Initial material testing	Vegetative Cover (topsoil) Maximum Particle Size (ASTM D 422)	1 per source
Initial material testing	Vegetative Cover (topsoil) Organic Content	1 per source
Initial material testing	Vegetative Cover (topsoil) pH	1 per source
Initial material testing	Certification that material is free from environmental contamination	1 per source
Construction	Low-Permeability Soil Particle Size Analysis	Every 2,500 yd <sup>3</sup>
Construction	Low-Permeability Soil Atterberg Limits	Every 2,500 yd <sup>3</sup>
Construction	Low-Permeability Soil Moisture-Density (compaction)	Every 2,500 yd <sup>3</sup>
Construction	Low-Permeability Soil Nuclear Moisture Content	Three tests per acre per lift
Construction	Low-Permeability Soil Nuclear Density	Three tests per acre per lift
Construction	Low-Permeability Soil Permeability Testing (ASTM D 5084)	Every 5,000 yd <sup>3</sup>
Construction	Vegetative Cover (topsoil) Maximum Particle Size	Every 2,500 yd <sup>3</sup>
Construction	Vegetative Cover (topsoil) Organic Content	Every 2,500 yd <sup>3</sup>
Construction	Vegetative Cover (topsoil) pH Testing	Every 2,500 yd <sup>3</sup>
Construction	Low Permeability Soil Placement – 8-inch loose lifts	Daily during placement

**TABLE 7-1**  
Construction Monitoring Tests and Observations by Task

Task	Monitoring Test / Observation	Frequency
Construction	Vegetative Cover (topsoil) Placement – 6-inch single compacted lift	Daily during placement
Asbestos Abatement	Air monitoring	Daily
Decontamination	Monitor decontamination procedures	Daily
Demolition	Air monitoring/ambient dust monitoring	Daily
Transportation & Disposal	Monitor trucks loading	During shipment
	Monitor truck weights to verify not overweight	

ASTM = American Society for Testing and Materials

## SECTION 8

# Sampling Requirements

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The following types of air samples will be collected as part of the building decontamination/demolition:

- For health and safety purposes personal sampling will be performed during asbestos abatement and demolition activities.
- Clearance sampling will be performed after asbestos-containing material abatement activities.
- During active demolition activities, perimeter air sampling will be performed.

These items will be tracked in the Testing Plan and Log (Appendix A). To ensure the quality and consistency of the data collected, QA/QC samples will be collected and managed according to the Quality Assurance Program Plan and the Sample Analysis Plan. All field activities associated with sample collection will be conducted in accordance with the site-specific HASP.

## SECTION 9

# Submittal Review and Approval

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Construction QC submittals are generated by either the QC manager or the subcontractor during or immediately before construction to demonstrate compliance with the project plans. Submittal requirements for projects are tabulated in the Submittal Register (Appendix A), in accordance with the requirements identified in the project plans.

The QC manager will log and track all submittals on the Submittal Register. Specific responsibilities regarding submittals include the following:

- Coordinating all submittal actions
- Maintaining necessary submittal records in an organized manner
- Maintaining and tracking submittals in the Submittal Register
- Reviewing and certifying all submittals for compliance with the project plans, drawings, and specifications
- Approving all submittals except those designated to be approved by the technical lead (project plan's lead engineer), USEPA, or stakeholders
- Checking all material and equipment delivered to the project for compliance with the project plans, drawings, and specifications

Certain designated submittals require approval by authorities other than the QC manager (such as the project manager, technical lead, or others). In such cases, the QC manager forwards the submittal to the project manager or project engineer who then routes the submittal to the appropriate approver.

The construction manager and QC manager are responsible for coordinating the submittal relegation and approval process, and for ensuring that the process does not impact the project schedule.

## 9.1 Submittal Review and Control

The contractor will control and schedule all submittals and document the process in the Submittal Register. The QC manager is responsible for updating the Submittal Register at least weekly and for forwarding a copy of it to the project manager and QA/QC program manager at the end of each month. Each submittal will be routed on a standard submittal form. Units of weights and measures used on all submittals will be consistent with those used in the project documents.

Each submittal will be reviewed for completeness and compliance with contract requirements by the appropriate qualified individuals. The submittal reviewers and approvers will be designated before construction.

Before each submittal, the QC manager will certify the submittal complies with the project requirements. Submittals that do not comply with the requirements will be returned to the originator for correction and re-submittal. Substitutions or variations of specified requirements will be clearly noted. Certification of the approved submittals will be indicated by signing or initialing and dating the submittal form by the QC manager. Submittals may include the following:

- Vendor design calculations, shop drawings, etc.
- Personnel qualifications (welding, etc.)
- Product data
- Permits
- Samples
- Catalog cuts/pages
- Production, inspection, and test reports
- Material certifications
- Progress reports, safety reports, manpower reports, etc.
- As-built or certified data
- Operation and maintenance manuals
- QC records and certifications
- Sample and test results
- QC reports
- Construction photographs
- Contract closeout documents
- Completed hazardous waste manifests and disposal certificates

## **9.2 USEPA and Stakeholder Approval of Submittals**

Any submittal that requires USEPA approval should be clearly indicated in the technical sections of the specification or the drawings. Submittals for items that are extremely critical or complex, or are considered an extension of the work plan, should be submitted to USEPA for approval. The submittals still require review for conformance and certification by the QC manager. This includes instances when the approver requires knowledge of the design assumptions and calculations.

As project-specific tasks are identified, the Submittal Register will be amended to include documentation requirements for those tasks.

## Change Control

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Changes to final designs and project plans, field changes, or any other modifications are subject to design verification measures commensurate with those applied to the implementation work plan and draft project plans. The project manager approves work plan changes in consultation with the technical lead/lead engineer.

RFIs will be used to communicate and document clarifications and modifications requested by the subcontractor. The RFIs will be tracked and logged by the QC manager to ensure each RFI is fully addressed and that changes to the plans, drawings, and specifications are completely and accurately documented.

### 10.1 Construction Changes

Changes to materials, supplies, work approaches, and corrective action area designs during the construction effort will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

Changes to construction drawings as a result of an RFI will be identified with a symbol in the border identifying the RFI identification number and title. The drawing should also be marked with a cloud or circle, etc., to distinguish the change from the original drawings. The sheet will then supersede the existing drawing in the drawing set.

Note that the RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the drawings and specifications of the project plans. The RFI is intended to obtain input and concurrence from the lead engineer responsible for the development of the project plans. Approval of the RFI by the lead engineer does not constitute approval for the contractor or its subcontractors to perform work outside the project scope or budget. In the event that an issue identified in the RFI requires a change to the project scope, schedule, or budget, it should be clearly conveyed in the RFI. In such instances, it is the responsibility of the project manager to work closely with the contract administrator to seek and obtain proper approval from the USEPA project manager and contracting officer (in accordance with established contract procedures) prior to implementing the change recommended in the RFI. All proposed changes will be reviewed and approved by USEPA and Base personnel prior to finalizing any change.

## SECTION 11

# Noncompliance and Corrective Actions

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The QC manager will notify the subcontractor of any detected noncompliance with the foregoing requirements. The subcontractor will take immediate corrective action after receipt of such notice. Such notification, when delivered to the subcontractor at the work site, will be deemed sufficient. If the subcontractor fails or refuses to comply promptly, the QC manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the daily report. Completion of corrective action will be noted on the daily report. Verification of the corrective action and its results will be performed by the QC manager and documented in the Daily Report.

## 11.1 Corrective Action Plan

Resolution of failing test results or noncompliance reports will be completed through a corrective action plan. The corrective action plan will be developed and documented by the QC manager in conjunction with the project manager. The agreed-upon corrective action plan will be implemented and documented by the QC manager. Completion of the corrective action plan is the responsibility of the QC manager.

# Quality Control Documentation

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## 12.1 Daily Report

The Daily Report is an essential tool for recording and reporting daily production, safety, and QC activities of the project. The Daily Report is the daily record of operations on the job site and must be kept current. These reports are the official record of work performance and compliance with project plans, drawings, and specifications. It is therefore critical that the reports are accurate and timely.

The QC manager is responsible for preparing the daily report and submitting these on a weekly basis to the project manager and the QA/QC program manager. The QC manager will obtain operational information from the construction manager (as well as any other contractor field personnel). The health and safety officer will provide information on all health and safety activities. The report also includes reports from each subcontractor working on the site, which will address, but are not limited to, the following:

- Quality aspects of the project being performed by the subcontractor
- Scheduling and resource issues
- Site safety inspections and concerns
- Environmental concerns
- Job progress
- Control inspections
- Tests performed and their results
- Crafts, personnel, and equipment onsite
- Material received

The project team must review the daily reports for accuracy and completeness as they are often used to prepare the final reports for the project. The project manager should review these reports and ensure the QC process is working effectively on the project. The QA/QC program manager should review these reports and ensure the QA/QC processes and systems are working effectively on the program.

The Daily Report template is included in Appendix A. The following should be attached to the Daily Report:

- Tailgate safety meeting minutes and signatures
- Project status meeting minutes
- Submittals
- Testing plan and log
- Permits
- Chain-of custody records
- Waste disposal documentation

Implementation of the CQP is documented and reported to USEPA using a series of reports, submittals, and deliverables. These deliverables, the parties responsible for preparing them, submission frequency, and relative content are listed in Table 12-1.

Documentation generated by the QC system must be maintained in an orderly fashion. It is suggested that the QC manager provide a series of 3-ring binders for ready reference. This information should be arranged by specification section, and tabbed to include the following major milestone inspections and items:

- Punch list inspections
- Prefinal and final inspection results
- Rework items lists
- Test results
- Contract modifications and RFIs arranged in numerical order
- Noncompliance notices and corrective actions

## 12.2 Field Documentation Operating Procedures

The objective of the field documentation operating procedures is to ensure appropriate project information is documented in logbooks during construction. This documentation is important for communicating activities with other staff members, USEPA, and Base personnel.

QC observations, inspections, and records of general QC activities on a regular basis are documented as follows:

- Record daily progress and associated QA and QC sampling
- Record construction operations, sequence, staging, etc.
- Maintain waste disposal records
- Describe deviations from expected conditions, or unexpected problems and their resolution

**TABLE 12-1**  
Reporting and Field Documentation Required

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Daily Report	Construction Manager/site supervisor and/or QC manager	Project manager	Daily ; to QA/QC manager weekly	Documents daily construction and QC activity. A Daily Report template is included in Appendix A.
Weekly Update Report	Project manager	USEPA work assignment manager	Weekly	Presents a list of activities completed, any problems encountered, and the next week's activities.
Testing Plan and Log	QC manager	Project manager	As performed, attached to the last Daily Report submitted for each reporting period; to QA/QC manager weekly	Summarizes all testing activity conducted for the reporting period with test results (pass/fail) A Testing Plan and Log template is included in Appendix A.

**TABLE 12-1**  
Reporting and Field Documentation Required

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Project Status Meeting Minutes	QC manager	Project manager	Attached to the appropriate Daily Report to QA/QC manager weekly	Minutes of any project status meeting held. A Meeting Minutes template is included in Appendix A.
Rework Items List	QC manager	Project manager	Monthly, attached to the last Daily Report submitted for each reporting period To QA/QC manager monthly	Documents re-work items not corrected on same day as discovery. Includes items identified by both contractor and USEPA or stakeholders. A Rework Items List Template is included in Appendix A.
Submittal Register	QC manager	Project manager	Maintained through the life of the work assignment To QA/QC manager monthly	A part of each work assignment's Construction Quality Plan; Specific to the construction activity for that CTO. An Submittal Register template is included in Appendix A.
As-Built Records	QC manager	Project manager, USEPA	Maintained in field through life of each work assignment; ensure to be complete and accurate by field engineer / QC manager upon completion of work assignment activities, included in Final Report	Requirements specified in each work assignments Construction Quality Plan; to be maintained at job site and inspected by QC manager to ensure daily maintenance
Photographic Record	QC manager	Project manager	Maintained in field through the life of the work assignment	Photographic record showing construction progress, special situations A Photo Log template is included in Appendix A.
RFIs	QC manager	Project manager, Lead Engineer	As required.	Standard form. Generated in the Field; routed to the office for approval. Log maintained in the field. An RFI form is included in Appendix A.
Transportation and Disposal Log	QC manager	USEPA Program Waste Coordinator and QA/QC manager	Monthly and maintained in field through the life of the work assignment	Tracks waste on the project from generation to final disposition A template of the Waste Tracking Log is included in Appendix A.

## 12.3 Site Preparation

Site preparation is performed by the subcontractor but will be observed by the QC manager with the following checks:

- Verify that equipment delivered to the site is the equipment specified.
- Confirm that a clearance check is performed to locate and identify each pipeline for all known utilities.
- Monitor the condition of the access roads. Verify that the proper signs are installed, the roads are maintained, and the road can accommodate construction traffic.
- Observe arrival and testing of materials to be installed as they are delivered onsite.
- Inspect all delivered materials to verify there are no defects in workmanship.
- Monitor delivery, handling, and storage of materials per the specifications.
- Verify storage facilities are protective and secure to prevent damage to equipment and materials per specifications.
- Review manufacturer material certifications.

## 12.4 Field Logbook

The QC manager will maintain a record of daily QC activities during construction in a field log book. The field log book will be available upon request for review. As an operating procedure for log book entries, the following items will be recorded, at a minimum:

- Date, project name, and location
- Time work begins every day
- Summary of weather conditions
- General description of work activities, size of work crew, and the equipment and personnel onsite
- Duration of lunch break
- Start time and duration of downtime resulting from equipment breakdown, weather, or plant emergencies, etc.
- Summaries of QC meetings and actions recommended to be performed
- QC testing of equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data provided by the suppliers
- Record of decisions made regarding defective work or corrective actions implemented, or both
- Field tests
- Sampling activities

The QC manager will sign or initial the bottom of each page of the field log and date the entry in order to show that notes are being taken on a daily basis. A line-through will be placed on any portion of a log book page that is unused. In addition, the same information will be documented in the Daily Report.

## SECTION 13

# Schedule

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A detailed project schedule will be prepared and updated each month as part of the contract. The schedule will be submitted with the monthly invoice until the period of performance for the contract is reached.

# Glossary

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**Construction Quality Management Manual** describes the quality systems and processes that are required to be implemented on contracts and projects executed by the Environmental Services Business Group's (ESBG's) Construction Operations, including on design/build and at-risk construction projects. The quality systems and processes have been put into place in order to manage the risks and liabilities of the company, to ensure the quality and consistency of construction projects executed throughout the ESBG, and to provide our clients with products and services that meet or exceed their expectations at an acceptable cost and within budget.

**Construction Quality Plan (CQP)** establishes the guidelines and requirements to be used for project delivery to meet client objectives and achieve CH2M HILL standards. The primary objective of the CQP is to document requirements, procedures, and methodology for quality assurance and control during construction of each ESBG project. (Reference standard operating procedure [SOP]: ES-P2-03)

**Construction quality submittals** are those submittals generated during or immediately prior to construction to demonstrate compliance with the project plans, drawings, and specifications. Construction quality submittals include daily reports, shop drawings, schedules, sample documentation, calibration records, photographs, product data, samples, field change request documentation, administrative and close out submittals, and additional technical support data presented for review and approval.

**Contract-required submittals** such as project plans, including Work Plans, HASPs, design drawings and specifications, reports, and as-built records will be clearly identified during the proposal phase of the project. Contract-required submittals are items that are submitted to the customer and stakeholders for review and approval prior to and following construction activities.

**Quality Control (QC)** refers to a planned system for monitoring, controlling and documenting the quality of materials, supplies, and workmanship in a manner consistent with the execution plan and the drawings and specifications. These are the active tasks associated with quality management.

**Project Instructions** provide management instructions for construction operations, documentation and reporting for work to be performed. The instructions provide guidance to the project team and clarify project manager expectations regarding personnel assignments, responsibilities, accountability, project goals, direction, processes, and procedures through the construction phase of the project. The project instructions define parameters for the implementation of the project quality management plan. (Reference SOP: ES-P2-02)

**Quality Assurance (QA)** refers to the overall quality process. It is the assurance that the construction effort is conducted in a manner consistent with the design.

**Appendix A**  
**Construction Quality Assurance Plan Forms**

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## SUBMITTAL REGISTER

Project:	Eagle Zinc OU Site 1		Work Assignment No:	WA# 67-RD-RD-B5Y7/101-RDRD-B5Y7	Activity / Task:	Temporary Landfill Cover					
Item No.	Description of Submittal	Reference: Spec / Drawing	Approving Requirement: Approval (A) or Information (I)	Approving Authority: (CH or Contracting Officer or Rep)	Submittal Frequency: (One time, weekly, etc.)	Date Submitted to Approver	Approving Authority Name	Title / Company or Agency	Status: -Approved -Rejected	Date Approved	Remarks
1	Project Work Plan/Execution Plan										
2	Health and Safety Plan										
3	Quality Control Plan										
4	Environmental Protection Plan										
5	Waste/Hazardous Waste Management Plan										
6	Request to Work Outside Regular Hours										
7	Utilities Outage Request										
8	Permits										
9	Laboratory Certification/Accreditation										
10	MSDS Sheets										
11	Contractor and Subcontractor Personnel List										
12	Original Waste Manifests										
13	Test Reports										
14	Testing Plan and Log										
15	QC Meeting Minutes										
16	QC Certifications										
17	Rework Items List										
18	Coordination and Mutual Understanding Meeting Minutes										
19	Photographic Records and Photo Log										
20	Material Specifications										
21	Subcontractor Field Notes										
22	Subcontractor Training and Experience Records										
23	As-Built Records										
24	Project Completion Report / Closure Report										
25	Daily Reports										

## Testing Plan and Log

[illegible]



## REQUEST FOR INFORMATION

Project Name/Description:		RFI No.:	Date Submitted:
Contract/TO No:		Project No:	
<b>To:</b>			
Name		Title	
<b>From:</b>			
Name		Title	
<b>REFERENCES</b>			
Document (Work Plan, Scope of Work, etc.):			
Drawing(s)/Specification (Drawing No, Specification No., etc.):			
Detail/Section (Page No., Section No., Paragraph No., etc.):			
Discipline (Architecture, Electrical, Mechanical, Chemical, Hydrogeology, etc.):			
<b>POTENTIAL IMPACT:</b> Cost <input type="checkbox"/> Schedule <input type="checkbox"/> Activity/Task Impacted:			
<b>REQUEST</b>			
Requested By: (Name/Company/Title)		Response Requested by Date:	
<b>REPLY:</b>			
Responded By: (Name/Company/Title)		Date of Response:	
<b>RESPONSE DISPOSITION/ CONCURRENCE:</b>			
Response Dispositioned / Concurred With By: (Name/Company/Title)		Date Response Dispositioned Concurred With:	
<b>FURTHER ACTIONS REQUIRED:</b>			
<b>REVIEW DISTRIBUTION</b>		<b>FINAL DISTRIBUTION</b>	
<input type="checkbox"/> CH2M HILL PM	<input type="checkbox"/>	<input type="checkbox"/> CH2M HILL PM	<input type="checkbox"/>
<input type="checkbox"/> CH2M HILL CM	<input type="checkbox"/>	<input type="checkbox"/> CH2M HILL CM	<input type="checkbox"/>
<input type="checkbox"/> CH2M HILL QC	<input type="checkbox"/> Project Files	<input type="checkbox"/> CH2M HILL QC	<input type="checkbox"/> Project Files

**CH2MHILL****DAILY REPORT**

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

CONTRACT NAME:		REPORT NO:	
CONTRACT NUMBER:		REPORT DATE:	
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:		PROJECT NAME / LOCATION:	
PROJECT NUMBER:		PROJECT DESCRIPTION:	
PROJECT MANAGER:		FIELD QUALITY MANAGER:	
CONSTRUCTION MANAGER:		SITE SAFETY MANAGER:	
AM WEATHER:		PM WEATHER:	
		MAX TEMP (F):	
		MIN TEMP (F):	

**SUMMARY OF WORK PERFORMED TODAY**

--

**HEALTH AND SAFETY REPORT****SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED** (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:**TAILGATE TOPICS:****SAFE BEHAVIOR OBSERVATIONS:****OPERATIONS / PRODUCTION REPORT****WORK FORCE – CONTRACTOR AND SUBCONTRACTOR**

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
CH2MHILL			

**EQUIPMENT ON HAND**

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

**COMMENTS (acceptance status, inspection findings, etc.):**

--

**WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS**

Performed Work / Test for Today:

--

Planned Work / Test for Tomorrow:

--

Planned Work / Test for Next Week:				
<b>CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED</b> (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.):				
<b>VISITORS AND DISCUSSIONS:</b>				
<b>QUALITY CONTROL REPORT</b>				
<b>MATERIALS DELIVERED TO JOB SITE</b>				
Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By
<b>COMMENTS</b> (acceptance status, inspection findings, etc.):				
<b>INSPECTIONS PERFORMED</b>				
Task/Activity Inspected	Inspection Performed	Findings		
<b>TESTS PERFORMED</b>				
Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria		
<b>QUALITY ISSUES AND RESOLUTIONS:</b>				
<b>SUBMITTALS INSPECTION / REVIEW</b>				
Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?	Comment/Reason/Action
			Yes <input type="checkbox"/> No <input type="checkbox"/>	
			Yes <input type="checkbox"/> No <input type="checkbox"/>	
			Yes <input type="checkbox"/> No <input type="checkbox"/>	
			Yes <input type="checkbox"/> No <input type="checkbox"/>	
<b>REGULATORY COMPLIANCE REPORT</b>				
<b>PERMIT INSPECTIONS PERFORMED:</b>				
<b>WASTE ACCUMULATION/STOCKPILE AREA INSPECTION</b>				
Inspection Performed By:		Signature of Inspector:		
Accumulation / Stockpile Area Inspected:				

No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	
Inspection Results:							
<b>GENERAL COMMENTS</b>							
General Comments~ (rework, directives, etc.):							
<b>ATTACHMENTS</b>							
List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):							
<p>NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.</p>							
						PREPARER'S SIGNATURE	
						DATE	

# PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	

## Photo Log

[illegible]

## ES-P6-05A Transportation and Disposal Tracking Log

Project Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Column A - List CH2M HILL assigned project number

Column B - List Task Order number (if applicable)

Column C - Base or project name

Column D - List name of specific task or site (UST #35 or SWMU 68)

Column E - List type of container waste is placed (drum, rolloff, frac tank, stockpile, etc)

Column F - List number assigned to container

Column G - Date first drop/grain, etc of waste placed into container/stockpile.

Column H - Sample ID and/or profile number representing waste stream

Column I - Name of subcontractor handling T&D (lower tier sub)

Column J - Name of transporter removing waste from site

Column K - Date waste transported/removed from site

Column L - List transporter's DOT # and/or EPA ID # (EPA ID# only required for hazardous waste)

Column M - List name of disposal facility - list both intermediate and final facility name

Column N - List state ID # and/or EPA ID # (EPA ID# only required for hazardous waste). Note: list #'s for both intermediate and final facility

Column O - List matrix of waste (soil, water, concrete, etc)

Column P - Is waste hazardous, non-hazardous, petroleum contaminated, TSCA-regulated, etc?

Column Q - List hazardous waste code(s) (D008, U228, etc). RCRA then State as applicable.

Column R - Date received by disposal facility (date found at bottom of final facility-signed manifest)

Column S - List number of manifest used for waste tracking (top/left or middle of manifest)

Column T through Y - Insert ACTUAL quantity from weight ticket or other quantity document in column associated with disposal

Column W - List quantities here if taken to DRMO, base POTW, on-site treatment, etc. Please specify where in Comments column.

Column Z - Insert units applicable to waste; weight for solids, volumes for liquids

Column AA - Date of disposal, destruction or recycle per the Certificate of Disposal/Destruction/Recycle (CD). If not specified, may put date of actual CD

Column AB - Include any pertinent information not already listed

5

## Rework Items List

<div style="display: flex; align-items: center;"> <div> <b>PUNCH LIST (REWORK ITEMS LIST)</b> </div> </div>								
PROJECT NAME:			PROJECT NUMBER					
Item No	Date Identified	Description	Referenced Spec or Drawing	Date Subcontractor Notified	Proposed Date of Action Completion	Action Performed	Resolution	Date Completed
1								
2								
3								
4								
5								
6								
7								
8								
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10								
11								
12								
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16								
17								
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20								
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22								
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24								
25								
26								
27								

## **Appendix B**

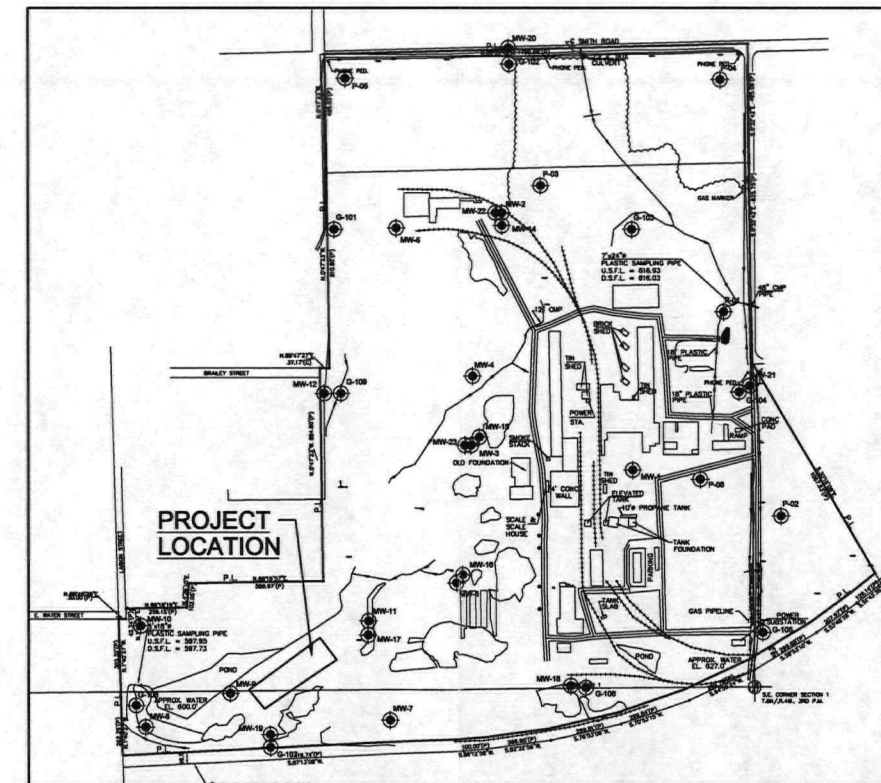
### **Design Drawings**

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WA No. 101-RD-RD-B5Y7  
CONTRACT NO. EP-S5-06-01

Topographic map of Hillsboro, Oregon, showing the project location. The map includes labels for "PROJECT LOCATION" with an arrow pointing to a specific site, "Hillsboro", "Salem", "Hillsboro Municipal Airport", and "Hillsboro". A scale bar indicates 1 inch equals 1.8 miles. The map also shows contour lines, roads, and various landmarks.

<u>SHEET NO.</u>	<u>DRAWING NO.</u>	<u>TITLE</u>
<u>GENERAL</u>		
1	G-1	TITLE SHEET, INDEX TO DRAWINGS, AND VICINITY / LOCATION MAPS
2	G-2	ABBREVIATIONS, CIVIL LEGEND, DETAIL DESIGNATION LEGENDS AND GENERAL NOTES
<u>CIVIL</u>		
3	C-1	EXISTING CONDITIONS
4	C-2	BMP FOR SOIL EROSION AND SEDIMENT CONTROL
5	C-3	SUBGRADE PLAN
6	C-4	FINAL GRADING PLAN
7	C-5	SECTIONS
8	C-6	DETAILS

[illegible]

EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
U.S. ENVIRONMENTAL PROTECTION AGENCY

# CH2MHILL

## GENERAL TITLE SHEET, INDEX TO DRAWINGS, AND VICINITY / LOCATION MAPS

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
0	1"
DATE	JUNE 201
PROJ	423315
DWG	G-
SHEET	

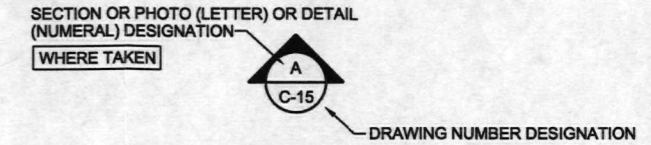
## ABBREVIATIONS

@	ABDN	AT	ABANDONED	L	LENGTH OF CURVE
AD	ADDL	ADJ	ADJACENT	LB	POUNDS
AE	ANALYSIS ELEMENT	AHR	ANCHOR	LB/D	POUNDS PER DAY
AL	ALUMINUM	ALT	ALTERNATE	LF	LINEAR FEET
APV	APPROX	APV	APPROXIMATE	LG	LONG
ARCH	ARCHITECTURAL	ASSEMBLY	ASSEMBLY	LPT	LONGITUDINAL
AVG	AVERAGE	BETW	BETWEEN	LR	LONG POINT ELEVATION
		BF	BOTTOM FACE	LT	LONG RADIUS
		BLDG	BUILDING		
		BOT	BOTTOM		
		BRG	BEARING		
				MATL	MATERIAL
				MAX	MAXIMUM
				MECH	MECHANICAL
				MFR	MANUFACTURER
				MGD	MILLION GALLONS PER DAY
				MG/L	MILLIGRAMS PER LITER
				MH	MANHOLE
				MIN	MINIMUM
				MISC	MISCELLANEOUS
				MM	MILLIMETER
				MON	MONUMENT
				MTL	METAL
				MTRG	METERING
				N	NORTH
				NIC	NOT IN CONTRACT
				NO	NUMBER
				NORM	NORMAL
				NTS	NOT TO SCALE
				OC	ON CENTER
				OD	OUTSIDE DIAMETER
				OF	OUTSIDE FACE
				O/H	OVERHEAD
				OPNG	OPENING
				OPP	OPPOSITE
				PC	POINT OF CURVATURE
				PI	POINT OF INTERSECTION
				P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
				POC	POINT ON CURVE
				POT	POINT ON TANGENT
				PROJ	PROJECT
				PSF	POUNDS PER SQUARE FOOT
				PSI	POUNDS PER SQUARE INCH
				PT	POINT OF TANGENCY
				PVC	POINT OF VERTICAL CURVATURE OR
				PVI	POINT OF VERTICAL INTERSECTION
				PVMT	PAVEMENT
				PVT	POINT OF VERTICAL TANGENCY
				QDRNT	QUADRANT
				RAD	RADIUS
				RC	REINFORCED CONCRETE
				RCP	REINFORCED CONCRETE PIPE
				RDCR	REDUCER
				REINF	REINFORCE
				REQD	REQUIRED
				S	SOUTH
				SCH, SCHED	SCHEDULE
				SF	SQUARE FEET
				SECT	SECTION
				SH	SHEET
				SIM	SIMILAR
				SPEC	SPECIFIED
				SPECS	SPECIFICATIONS
				SPG	SPACING
				SQ	SQUARE
				STA	STATION
				STD	STANDARD
				STOR	STORAGE
				STR	STRAIGHT
				STRUCT	STRUCTURAL
				STL	STEEL
				SYMM	SYMMETRICAL
				T	TREAD OR TANGENT LENGTH
				T&B	TOP AND BOTTOM
				TC	TOP OF CONCRETE
				THK	THICK
				TI	TEMPERATURE INDICATOR
				T.O.	TOP OF
				TPD	TONS PER DAY
				TPI	TURNOUT POINT OF INTERSECTION
				TRANSV	TRANSVERSE
				TSS	TOTAL SUSPENDED SOLIDS
				TW	TOP OF WALL
				TYP	TYPICAL
				UON	UNLESS OTHERWISE NOTED
				VERT	VERTICAL
				W	WEST OR WIDTH
				W/	WITH
				WK	WEEK
				WS	WATER SURFACE
				YR	YEAR

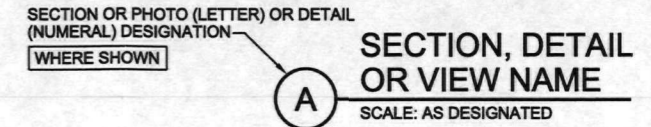
## CIVIL LEGEND

EXISTING	THIS CONTRACT	
		SPOT ELEVATION
		CONTOUR LINE
		EMBANKMENT AND SLOPE
		DRAINAGEWAY OR DITCH
		CATCH BASIN OR INLET
		TRENCH DRAIN
		SIGN
		MANHOLE
		ELECTRICAL MANHOLE
		ELECTRIC HANDHOLE
		POST OR GUARD POST
		GUY ANCHOR
		FIRE HYDRANT
		UTILITY POLE
		LIGHT POLE
		BENCH MARK
		SURVEY CONTROL POINT OR POINT OF INTERSECTION
		BRUSH/TREE LINE
		TREE
		PROPERTY LINE
		CENTER LINE, BUILDING, ROAD, ETC.
		STAGING OR WORK AREA LIMITS
		EASEMENT
		STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES
		DEMOLITION
		STRUCTURE, BUILDING OR FACILITY DEMOLISHED IN 2008
		ASPHALT CONCRETE PAVEMENT
		GRAVEL SURFACING
		CONCRETE PAVEMENT
		OVERHEAD ELECTRIC LINE
		UNDERGROUND ELECTRIC LINE
		GAS LINE
		SANITARY SEWER LINE
		STORM SEWER LINE
		WATER LINE
		ABANDONED UTILITY LINE
		SINGLE SWING GATE
		DOUBLE SWING GATE
		SLIDING GATE
		CHAIN LINK FENCE
		SILT FENCE
		CULVERT

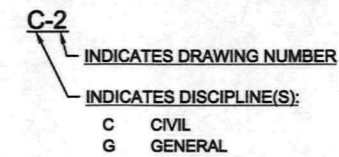
## SECTION, DETAIL AND VIEW DESIGNATION



ON DRAWING WHERE DETAIL IS DRAWN:



DRAWING NUMBER DESIGNATION:



## KEY NOTE DESIGNATION



## GENERAL SITE NOTES:

- EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
- HORIZONTAL DATUM: NAD 1983 STATE PLANE ILLINOIS EAST FIPS 1201 SURVEY FEET.
- VERTICAL DATUM: NAVD 1988.
- EXISTING CONDITIONS DRAWING AND SURVEY FROM HURST - ROSCHE ENGINEERS INC. DATED SEPT. 18, 2002

## GENERAL NOTE:

- THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

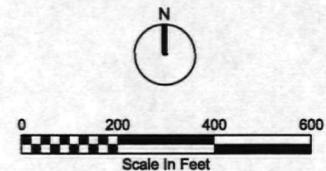
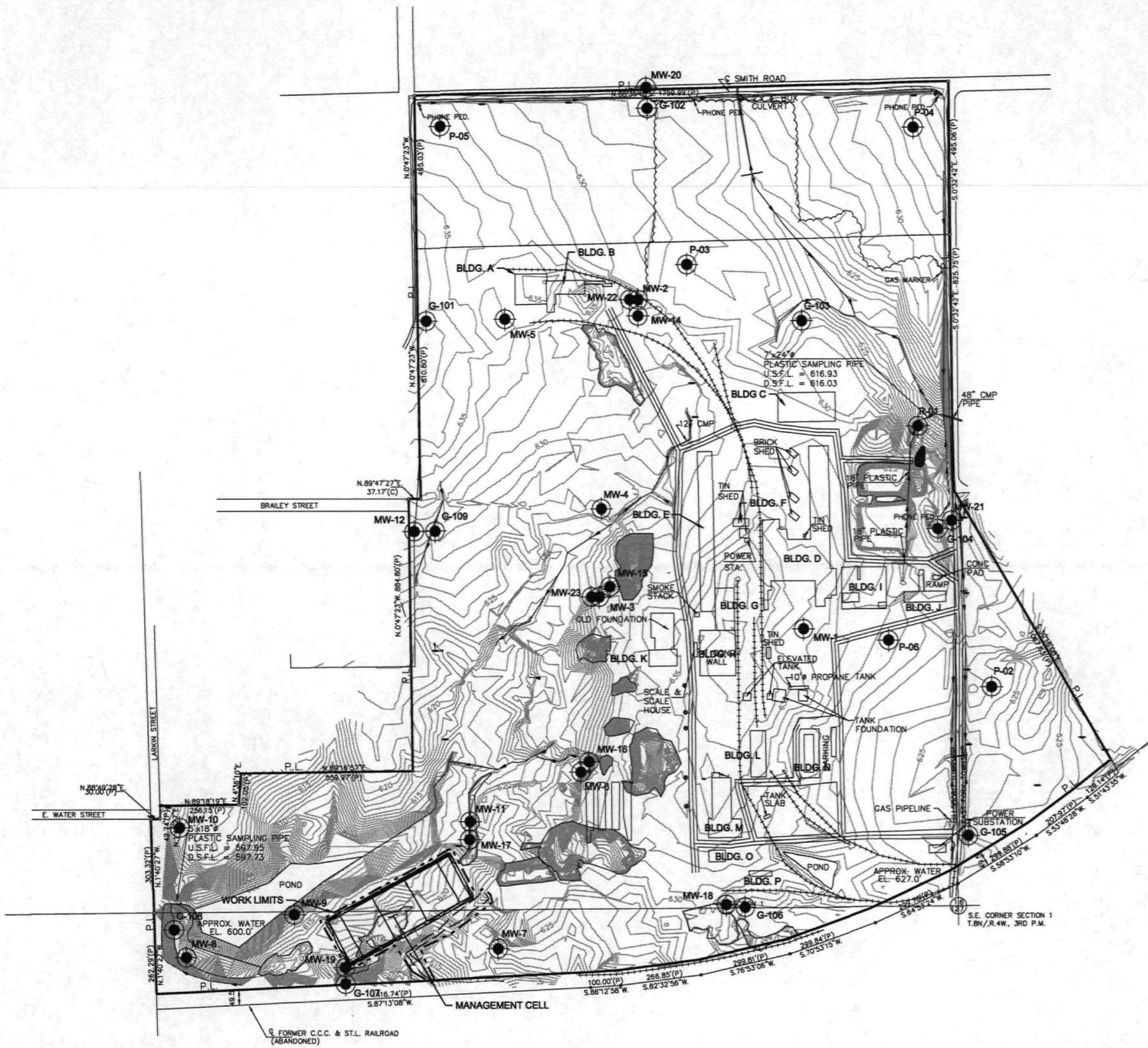
CH2MHILL

GENERAL  
ABBREVIATIONS,  
CIVIL LEGEND,  
AND DESIGNATION LEGEND

EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
US ENVIRONMENTAL PROTECTION AGENCY

NO.	DATE	REVISION	BY	APVD
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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
DATE
PROJ
DWG
SHEET



NOTES:  
EXISTING CONDITIONS DRAWING AND SURVEY FROM  
HURST - ROSCHE ENGINEERS INC.  
DATED SEPT. 18, 2002

# CH2MHILL

CIVIL

EXISTING CONDITIONS

EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
US ENVIRONMENTAL PROTECTION AGENCY

DATE	JUNE 2011
PROJ	423315
DWG	C-1
SHEET	3

1" = 200'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

FILENAME: dn05c001\_403933.dgn PLOT DATE: 6/8/2011 PLOT TIME: 3:23:33 PM

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100		DR				

REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN ARE THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. ©CH2M HILL 2010. ALL RIGHTS RESERVED.



FILENAME: d:\05-002\_403833.dgn PLOT DATE: 6/6/2011

<b>CH2MHILL</b>		EAGLE ZINC REMEDIAL DESIGN HILLSBORO, ILLINOIS US ENVIRONMENTAL PROTECTION AGENCY		NO. DATE REVISION BY APVD	
CIVIL		BEST MANAGEMENT PRACTICES FOR SOIL AND EROSION CONTROL		DSGN DR CHK APVD	
DATE JUNE 2011		PROJECT 42331B		S HUTSELL G BOWLES A MORAN L CUNDIFF	
DWG C-2		SHEET 4			
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1'		1" = 50'			
PLOT TIME: 3:32:04 PM		PRELIMINARY			

POINT	NORTH	EAST	ELEV.
1	908312.177	694649.595	620.93
2	908268.196	694673.378	620.93
3	908268.491	694603.561	620.51
4	908244.509	694629.345	620.51
5	908264.804	694761.528	620.09
6	908220.823	694785.311	620.09
7	908241.118	694717.494	619.68
8	908197.136	694741.277	619.68
9	908217.431	694673.46	619.26
10	908173.45	694697.244	619.26
11	908193.745	694629.427	618.85
12	908149.763	694653.21	618.85
13	908170.058	694585.393	618.43
14	908126.077	694609.176	618.43
15	908146.371	694541.36	618.01
16	908102.39	694565.143	618.01



SUBGRADE PREPARATION  
\*\* Total Cut = 2595 Cubic Yards \*\*  
\*\* Total Fill = 2336 Cubic Yards \*\*  
\*\* Area = 8750 Sq Yards \*\*  
\*\* Balance = 259 Cubic Yards \*\*  
NOTE:  
QUANTITIES FOR SUBGRADE PREPARATION  
WERE ESTIMATED FOR COST ESTIMATING  
PURPOSES.

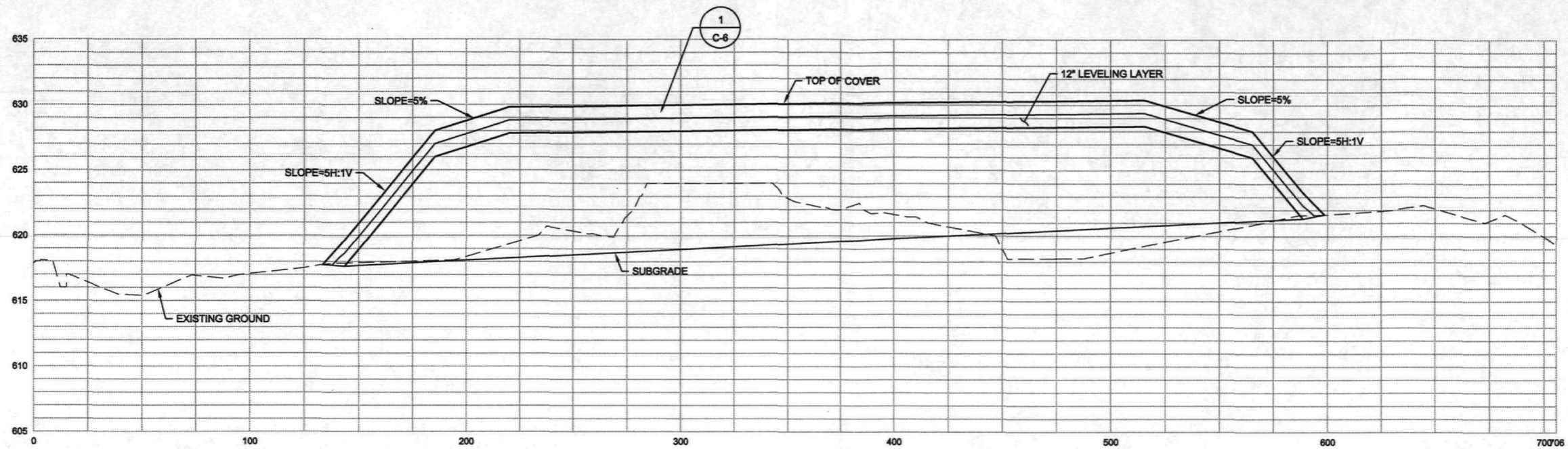
CH2MHILL

CIVIL  
SUBGRADE PLAN

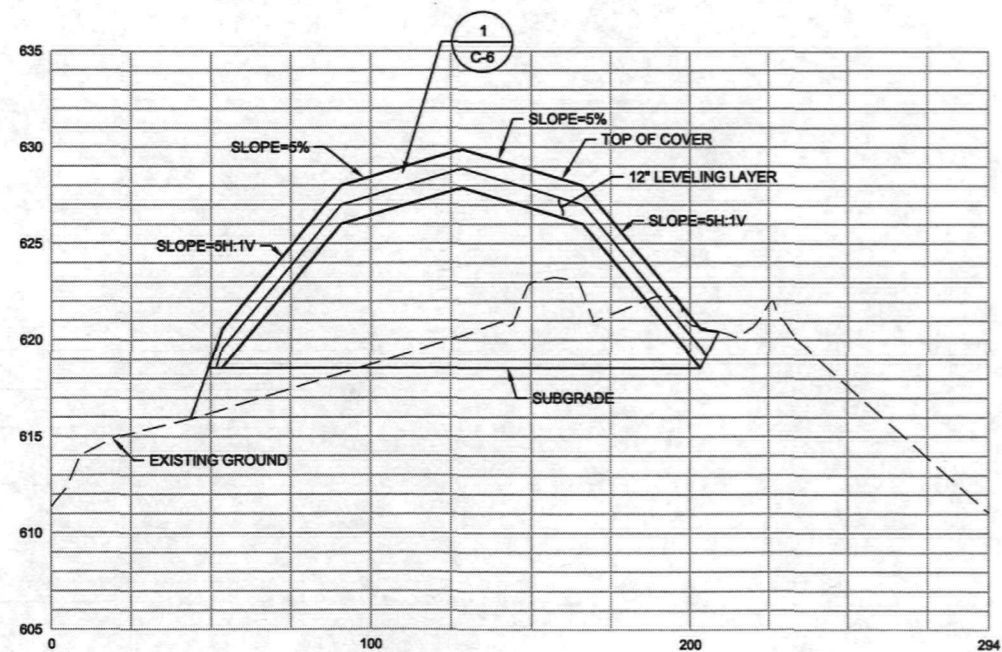
EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
US ENVIRONMENTAL PROTECTION AGENCY

NO.	DATE	REVISION	BY	APVD
DSGN		DR		
		CHK		
		APVD		
		SG HUTSELL	GF BOWLES	A. MORAN
				L CUNDIFF

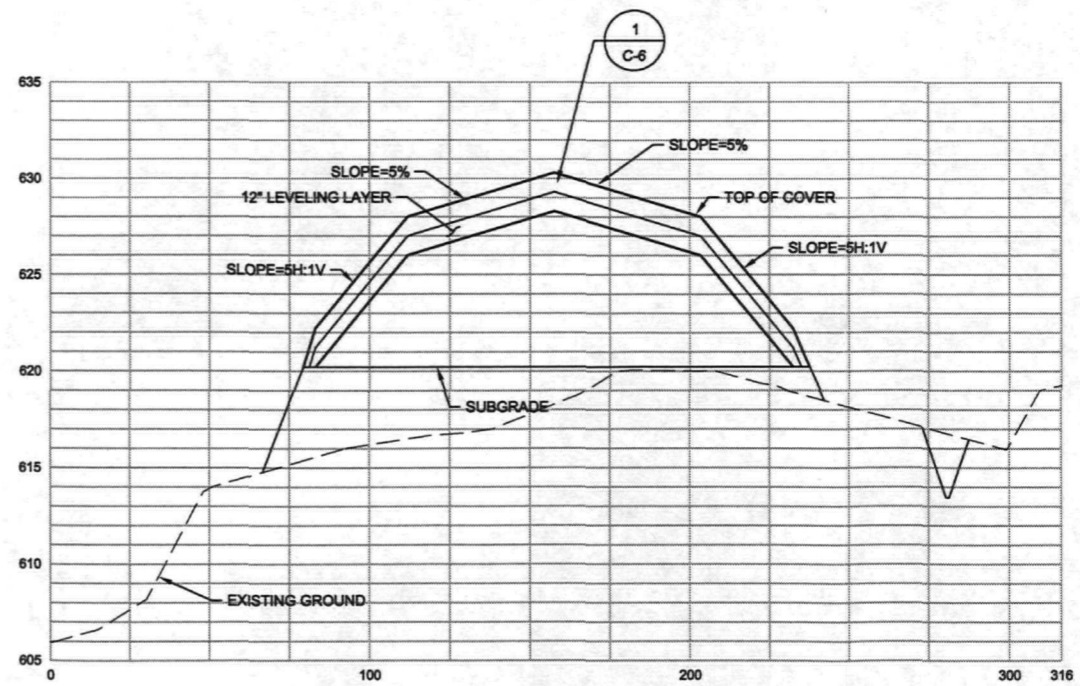




**A** SECTION  
1"=30' H, 1"=5' V  
C-3



**B** SECTION  
1"=30' H, 1"=5' V  
C-3



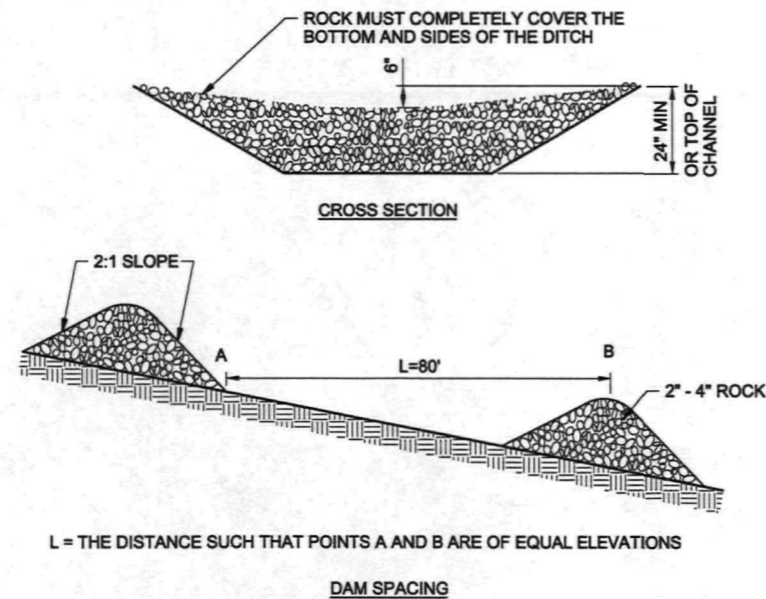
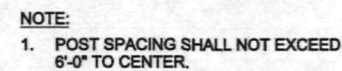
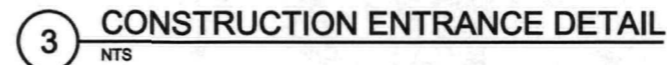
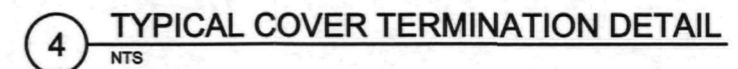
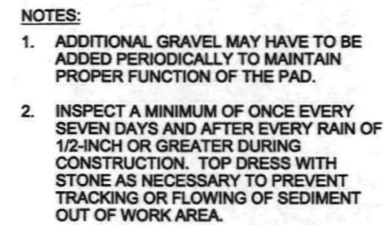
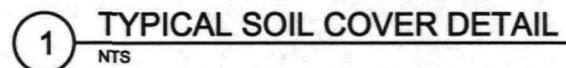
**C** SECTION  
1"=30' H, 1"=5' V  
C-3

NO.	DATE	DR	REVISION	BY	APVD
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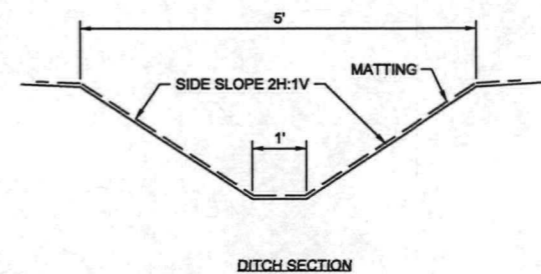
EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
US ENVIRONMENTAL PROTECTION AGENCY

CIVIL  
SECTIONS

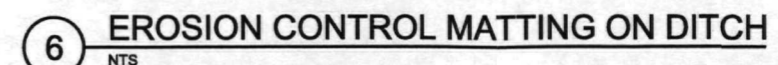
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	JUNE 2011
PROJ	423315
DWG	C-6
SHEET	7



1. ANY SEDIMENT DEPOSITION OF MORE THAN 0.5 FEET SHALL BE REMOVED SO THAT THE CHANNEL IS RESTORED TO ITS DESIGN CAPACITY.
2. THE CHANNEL SHALL BE EXAMINED FOR SIGNS OF SCOURING AND EROSION OF THE BED AND BANKS. IF SCOURING OR EROSION HAS OCCURRED, AFFECTED AREAS SHALL BE PROTECTED BY RIP-RAP OR AN EROSION CONTROL BLANKET OR NET.




1. SLOPE SURFACE SHALL BE SMOOTH BEFORE PLACEMENT FOR PROPER SOIL CONTACT.
2. DO NOT STRETCH BLANKETS/MATTINGS TIGHT, ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES.
3. STAPLE PATTERN AS PER MANUFACTURER'S RECOMMENDATIONS.
4. FOR SLOPES LESS THAN 3:1, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS.

[illegible]

EAGLE ZINC REMEDIAL DESIGN  
HILLSBORO, ILLINOIS  
U.S. ENVIRONMENTAL PROTECTION AGENCY

# CH2MHILL

DETAILS

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0  1"	
DATE	JUNE 2011
PROJ	423315
DWG	C-6
SHEET	8

## **Appendix C**

### **Technical Specifications**

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#### DIVISION 32—49 (NOT USED)

### END OF SECTION

**SECTION 01 11 00  
SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 DEFINITIONS**

- A. Contractor: CH2M HILL is contracted to USEPA to perform the work and therefore is the Contractor.
- B. Owner: the USEPA is the owner of the Work.
- C. Subcontractor: the successful bidder of this subcontract will become the Subcontractor (also known as the "Subcontractor").

**1.02 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The completed Work will provide Owner with the construction of a waste management cell located in the southwestern portion of the Eagle Zinc property in Hillsboro, Illinois and the decontamination/demolition of the buildings, tanks, equipment and piping at the site.
- B. The waste management cell Work is divided into the following schedules:
  - 1. Waste Management Containment Cell Construction Schedule:
    - a. Mobilization.
    - b. Temporary erosion control implementation.
    - c. Site clearing and grubbing.
    - d. Subgrade preparation.
    - e. Low permeability clay placement.
    - f. Vegetative cover soil placement.
    - g. Seeding and site restoration.
    - h. Demobilization.
  - 2. The decontamination/demolition Work includes:
    - a. Mobilization and site preparation.
    - b. Implementation of erosion control measures.
    - c. Construction of temporary access roadways and ramps, as needed.
    - d. Disconnection of utilities.
    - e. Removal and offsite disposal of universal wastes, ACM, hazardous waste, etc.
    - f. Decontamination of building materials, tanks, equipment piping, ventilation ductwork and other metal items.

- g. Demolition of equipment, tanks, piping, the building roofs, walls, and superstructures down to the floor slabs. Backfill of below grade structures to surrounding grades.
- h. Implementation of control measures during demolition for regulated asbestos containing materials that were not able to be removed by the asbestos subcontractor (i.e., roofing materials). Decontamination of structural steel for offsite recycling segregation of materials from the building for onsite disposal (non-contaminated building materials) in a consolidation cell and offsite disposal at recycling facilities, a RCRA Subtitle D landfill, or a TSCA landfill.
- i. Demobilization.

**1.03 WORK NOT COVERED BY CONTRACT DOCUMENTS**

- A. The work associated with these technical specifications is limited to the scope of work described in the request for proposal.

**1.04 OWNER-FURNISHED PRODUCTS**

- A. Onsite borrow source is assumed to be unavailable for construction of the soil cover.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 31 13**  
**PROJECT COORDINATION**

**PART 1      GENERAL**

**1.01      SUBMITTALS**

- A. The following project plans shall be submitted by the Subcontractor prior to commencement of the Work. Full Notice to Proceed will be given by the Contractor only after these project plans have been accepted as satisfactory by the Contractor.
1. Work Plan:
- a. The Subcontractor shall submit a written Work Plan describing its proposed Work and approach for Work. The anticipated number of onsite personnel and their job functions in performing the Work shall be included. The Work Plan shall include details on the following, including drawings where appropriate:
    - 1) Mobilization/site setup.
    - 2) Construction of temporary access roadways and ramps.
    - 3) Erosion protection, dust and vapor control.
    - 4) Universal waste removal and disposal.
    - 5) Asbestos removal and disposal.
    - 6) Decontamination of building materials.
    - 7) Building demolition.
    - 8) Decontamination of structural steel.
    - 9) Demolition materials staging and disposal.
    - 10) Demobilization.
  - b. A discussion of both on-site and off-site traffic control shall be included in the Work Plan.
  - c. All proposed equipment to be used in execution of all phases of the Work shall be listed in the Work Plan. Copies of equipment manufacturers' specifications and catalog information shall be included in an Appendix to the Work Plan.
  - d. The Subcontractor shall include copies of any authorizations and/or permits required to perform the Work in the Work Plan.
  - e. Work Plan shall include Subcontractor's schedule for completion of Work and an organization chart showing all project personnel and their relationships.
  - f. Work Plan shall include Subcontractor's procedures for changed conditions. Subcontractor shall acknowledge that it shall identify out-of-scope work, bring it to the Contractor's attention in writing,

- and receive written notice to proceed from Contractor before undertaking any such work.
2. Emergency Response Plan:
    - a. The Subcontractor shall submit an Emergency Response Plan to the Contractor.
    - b. The Subcontractor's Emergency Response Plan shall conform to the requirements of Paragraph L of 29 CFR 1910.120.
    - c. The Emergency Response Plan shall include a Spill Plan.
  3. Transportation and Disposal Plan:
    - a. The Subcontractor shall submit a Transportation and Disposal Plan to the Contractor.
    - b. The Subcontractor's Transportation and Disposal Plan shall include, at a minimum, the following:
      - 1) Waste documentation procedures.
      - 2) EPA I.D. number(s) of waste transporter(s) for transportation of all wastes being disposed of at offsite disposal facilities, if applicable.
      - 3) Waste staging and transportation procedures.
      - 4) Waste characterization parameters to be used as acceptance criteria by landfills.
      - 5) List of RCRA Subtitle D landfills to be used for disposal of wastes; including locations and contact information.
      - 6) List of recycling facilities and/or smelting facilities to be used for disposal of steel.
      - 7) Copies of waste acceptance approval for each waste stream and landfill.
      - 8) Copies of (uncompleted) forms:
        - a) Final disposal documentation for each waste stream
        - b) Load tickets or manifests for every load destined for offsite disposal.
  4. Water Control Plan:
    - a. The Subcontractor shall submit a Water Control Plan to the Contractor.
    - b. The Subcontractor's Water Control Plan shall include, at a minimum, the following:
      - 1) All information related to Subcontractor's Work that Contractor will need to update the Erosion and Sediment Control Plan (ESCP).
      - 2) Drawings showing locations, dimensions, and relationships of element of each system.
  5. Decontamination Plan:
    - a. The Subcontractor shall submit a Decontamination Plan to the Contractor.

- b. The Subcontractor's Decontamination Plan shall include, at a minimum, the setup, removal, physical layout, location, equipment, and procedures for decontamination of personnel, materials, and equipment.
- 6. Site Specific Health and Safety Plan:
  - a. The Subcontractor shall submit a Site Specific Health and Safety Plan (SHSP) to the Contractor. Full Notice to Proceed will be given by the Contractor only after the SHSP has been accepted as satisfactory by the Contractor.
- B. Informational:
  - 1. Statement of Qualification (SOQ) for land surveyor and/or civil engineer.
  - 2. Photographs:
    - a. Digital Images: Submit on portable memory device or compact disc within: 3 days of being taken.
  - 3. Video Recordings: Submit one copy including updated copy of project video log, within 3 days of being taken.

## 1.02 RELATED WORK AT SITE

- A. General:
  - 1. Related work refers to work that is either directly or indirectly related to scheduled performance of the Work under these Subcontract Documents and is anticipated to be performed at Site by others.
  - 2. Coordinate the Work of these Subcontract Documents with Work.
  - 3. Further details of coordination with others will take place in project initiation meetings.
- B. Concurrent Work by Others:
  - 1. Contractor will monitor all vehicles and personnel entering the Site. Owner and Contractor assume no liability for Subcontractor-supplied equipment or materials or recyclable materials already present at the Site. Subcontractor is responsible for the security of their work area within the Site.
  - 2. Contractor will be conducting periodic perimeter air monitoring during the execution of the Work. The Subcontractor shall regularly communicate its Work schedule to the Contractor to allow the Contractor to plan the perimeter air monitoring events.
  - 3. Contractor may also be conducting groundwater sampling or other activities during the time this Work is being conducted.

1.03 OWNER-FURNISHED PRODUCTS (NOT USED)

1.04 UTILITY NOTIFICATION AND COORDINATION

- A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during Work.
- B. Power: The Subcontractor shall make its own arrangements for power.
- C. Water: During disconnection of the site water line, subcontractor shall install temporary fittings, metering, etc. to provide water for its work. Subcontractor shall coordinate with the water department for requirements. Temporary fittings, metering, etc. shall be removed upon completion of demolition activities and the water line capped.

1.05 PROJECT MILESTONES

- A. General: Include the Milestones specified herein as a part of the Progress Schedule required under Section 01 32 00, Construction Progress Documentation.
- B. Project Milestones: Following is a detailed description of each:
  - 1. Mobilization.
  - 2. Clear and Grub.
  - 3. Sub-Grade Completion.
  - 4. Waste Placement.
  - 5. Low Permeable Clay Layer Completion.
  - 6. Vegetative Soil Layer Completion.
  - 7. Seeding and Site Restoration.
  - 8. Construction of temporary access roadways and ramps, as needed.
  - 9. Disconnection of utilities.
  - 10. Removal and offsite disposal of Universal Wastes.
  - 11. Decontamination of Building Materials, Tanks, Equipment, Piping, Ventilation Ductwork and Other Metal Items.
  - 12. Demolition of equipment, tanks, piping, the building roofs, walls, and superstructures down to the floor slabs.
  - 13. Implementation of control measures during demolition for Regulated Asbestos Containing Materials that were not able to be removed by the Asbestos Subcontractor (i.e., roofing materials) Decontamination of structural steel for offsite recycling Segregation of materials from the building for onsite disposal (non-contaminated building materials) in a consolidation cell and offsite disposal at recycling facilities, a RCRA Subtitle D landfill, or a TSCA landfill.

14. Demobilization and Project Completion.

1.06 WORK SEQUENCING/CONSTRAINTS

- A. Sequence work accordingly as outlined in project meetings.

1.07 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at Site is started, Subcontractor, Contractor, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections in accordance with paragraph Construction Photographs and Audio-Video Recordings.
2. Upon receipt, Contractor will review, sign, and return one record copy of documentation to Subcontractor to be kept on file in field office.
3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Subcontractor's operations, and is for the protection of adjacent property owners, Subcontractor, and Owner.

1.08 CONSTRUCTION PHOTOGRAPHS

- A. Photographically document all phases of the project including preconstruction, construction progress, and post-construction.
- B. Contractor shall have the right to select the subject matter and vantage point from which photographs are to be taken.
- C. Preconstruction and Post-Construction:
1. After Effective Date of the Agreement and before Work at Site is started, and again upon issuance of Substantial Completion, take a

minimum of 50 exposures of Construction Site and property adjacent to perimeter of Construction Site.

2. Particular emphasis shall be directed to structures both inside and outside the Site.

D. Construction Progress Photos:

1. Photographically demonstrate progress of construction, showing every aspect of Site and adjacent properties as well as interior and exterior of new or impacted structures.
2. Weekly: Take 50 exposures using a digital camera.

E. Digital Images:

1. Archive using a commercially available photo management system.
2. Label each portable memory device with Project and Owner's name, and week and year images were produced.

1.09 AUDIO-VIDEO RECORDINGS

- A. Prior to beginning Work on Construction Site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, video-graph Construction Site and property adjacent to Construction Site.
- B. In the case of preconstruction recording, no Work shall begin in the area prior to Contractor's review and approval of content and quality of video for that area.
- C. Particular emphasis shall be directed to physical condition of existing vegetation, and topography in the work area.
- D. Contractor shall have right to select subject matter and vantage point from which videos are to be taken.
- E. Video Format and Quality:
  1. DVD format, with sound.
  2. Video:
    - a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections.
    - b. Electronically, and accurately display the month, day, year, and time of day of the recording.
  3. Audio:
    - a. Audio documentation shall be done clearly, precisely, and at a moderate pace.

- b. Indicate date, project name, and a brief description of the location of taping, including:
  - 1) Facility name.
  - 2) Street names or easements.
  - 3) Addresses of private property.
  - 4) Direction of coverage, including engineering stationing, if applicable.

F. Documentation:

- 1. Video CD Label:
  - a. CD number (numbered sequentially, beginning with 001).
  - b. Project name.
  - c. Applicable location by engineering stationing.
  - d. Date and time of coverage.
- 2. Project Video Log: Maintain an ongoing log that incorporates above noted label information for video files on Project.

1.10 REFERENCE POINTS AND SURVEYS

A. Owner's Responsibilities:

- 1. Establish bench marks convenient to Work.
- 2. Establish horizontal reference points or coordinate system with bench marks and reference points for Subcontractor's use as necessary to lay out Work.
- 3. Establish clearing limits, and set bench marks convenient for use as necessary to establish basic layout of Work.

B. Location and elevation of bench marks are shown on Drawings.

C. Subcontractor's Responsibilities:

- 1. Provide additional survey and layout required to layout the Work.
- 2. Check and establish exact location of existing facilities prior to construction.
- 3. In event of discrepancy in data or staking provided by Owner, request clarification before proceeding with Work.
- 4. Retain professional land surveyor or civil engineer registered in state of Project who shall perform or supervise engineering surveying necessary for additional construction staking and layout.
- 5. Maintain complete accurate log of survey Work as it progresses as a Record Document.
- 6. On request of Contractor, submit documentation.

7. Provide competent employee(s), tools, stakes, and other equipment and materials as Contractor may require to:
  - a. Establish control points, lines, and grades.
  - b. Check layout, survey, and measurement Work performed by others.
  - c. Measure quantities for payment purposes with appropriate supporting information of survey.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 31 19  
PROJECT MEETINGS**

**PART 1 GENERAL**

**1.01 GENERAL**

- A. The Contractor will schedule physical arrangements for meetings throughout progress of the Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 24 hours after each meeting to participants and parties affected by meeting decisions.
- B. Meetings will consist of in person meetings at the site, conference calls or other mutually agreed upon format.

**1.02 PRECONSTRUCTION CONFERENCE**

- A. Contractor shall be prepared to discuss the following subjects, at a minimum:
  - 1. Required schedules.
  - 2. Status of subcontract, submittals, bonds and insurance.
  - 3. Sequencing of critical path work items.
  - 4. Progress payment procedures, including lower-tiered subcontractors.
  - 5. Project changes and clarification procedures.
  - 6. Use of Site, access, office and storage areas, security and temporary facilities.
  - 7. Work day hours and days of week.
  - 8. Mobilization, setup, demobilization, and site cleanup.
  - 9. Disposal facilities and disposal documentation.
  - 10. Major product delivery and priorities.
  - 11. Subcontractor's safety plan and representative.
- B. Attendees will include:
  - 1. Owner's representatives.
  - 2. Subcontractor's office representative.
  - 3. Subcontractor's resident superintendent.
  - 4. Subcontractor's quality control representative.
  - 5. Sub-subcontractors' representatives whom subcontractor may desire or Contractor may request to attend.
  - 6. Contractor's representatives.
  - 7. Others as appropriate.

1.03 PRELIMINARY SCHEDULES REVIEW MEETING

- A. As set forth in Section 01 32 00, Construction Progress Documentation.

1.04 PROGRESS MEETINGS

- A. Contractor will schedule regular progress meetings at Site, conducted weekly to review the Work progress, Progress Schedule, Schedule of Submittals, Application for Payment, contract modifications, and other matters needing discussion and resolution.
- B. Attendees will include:
1. Owner's representative(s), as appropriate.
  2. Subcontractor (including Subcontractor's office representative and Subcontractor's resident superintendent), Sub-subcontractors, and Suppliers, as appropriate.
  3. Contractor's representative(s).
  4. Others as appropriate.

1.05 QUALITY CONTROL MEETINGS

- A. In accordance with Section 01 45 16.13, Subcontractor Quality Control.
- B. Will be discussed at the weekly meetings but may be scheduled by Contractor as necessary to review test(s) and inspection reports, and other matters relating to quality control of the Work and work of other subcontractors.
- C. Attendees will include:
1. Subcontractor.
  2. Subcontractor's designated quality control representative.
  3. Sub-subcontractors and Suppliers, as necessary.
  4. Contractor's representatives.

1.06 OTHER MEETINGS

- A. Daily Tailgate Meetings: All Subcontractor and Sub-subcontractor personnel at the Site shall attend a daily meeting for the purpose of discussion of health and safety issues as well as scheduling Work for the day. Contractor representative(s) shall be invited to attend the meeting. If a Contractor representative does not attend the meeting, a brief written summary of issues discussed the meeting and any resolutions shall be provided to Contractor within one hour of the end of the meeting.

B. Monthly Progress Meetings:

1. Conducted to discuss progress and identify and resolve coordination issues.
2. Attendees will include:
  - a. Owner's representative(s).
  - b. Contractor's representative(s).
  - c. Subcontractor's representative.
  - d. Sub-subcontractor(s) as appropriate.
  - e. Others as appropriate.

- C. In accordance with Contract Documents and as may be required by Owner and Contractor.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 32 00**  
**CONSTRUCTION PROGRESS DOCUMENTATION**

**PART 1 GENERAL**

**1.01 SUBMITTALS**

**A. Informational Submittals:**

1. Preliminary Progress Schedule: Submit at least 7 days prior to preconstruction conference.
2. Detailed Progress Schedule:
  - a. Submit initial Detailed Progress Schedule within 5 days after Effective Date of the Agreement.
  - b. Submit an Updated Progress Schedule at each update, in accordance with Article Detailed Progress Schedule.
3. Submit with Each Progress Schedule Submission:
  - a. Subcontractor's certification that Progress Schedule submission is actual schedule being utilized for execution of the Work.
  - b. Portal memory device file in Microsoft Project file or other method approved by the Contractor.
  - c. Progress Schedule: Four (4) color legible copies.
  - d. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
4. Prior to final payment, submit a final Updated Progress Schedule.

- B. Daily Report:** Subcontractor shall submit a daily report which summarizes work performed for the day, health and safety, work force and equipment present, work or test accomplished, changed conditions/delays or conflicts, visitors, material delivered to site, testing and inspections performed, submittal inspections/review, quality issues and resolutions, regulatory compliance report, and waste accumulation/stockpile area inspections.

**1.02 PRELIMINARY PROGRESS SCHEDULE**

- A.** In addition to basic requirements, show a detailed schedule, beginning with Notice to Proceed, for minimum duration of 90 days, and a summary of balance of Project through Final Completion.
- B.** Show activities including, but not limited to the following:
1. Notice to Proceed.
  2. Permits.

3. Submittals, with review time (Subcontractor may use Schedule of Submittals specified in Section 01 33 00, Submittal Procedures).
  4. Early procurement activities for long lead equipment and materials.
  5. Mobilization.
  6. Site preparation.
  7. Initial site work.
  8. Earthwork.
  9. Utility disconnects.
  10. Asbestos abatement.
  11. Universal waste abatement.
  12. Building decontamination.
  13. Building demolition.
  14. Material processing.
  15. Placement of processed material in consolidation cell.
  16. Loading/transportation of recyclables and material for off-site disposal.
  17. Site restoration.
  18. Demobilization.
  19. Specified Work sequences and construction constraints.
  20. Contract milestone and completion dates.
  21. Owner-furnished products delivery dates or ranges of dates.
  22. Project close-out summary.
  23. Demobilization summary.
- C. Update Preliminary Progress Schedule weekly. Failure to do so may result in the Owner withholding all or part of the monthly progress payment until the Preliminary Progress Schedule is updated in a manner acceptable to Contractor.
- D. Format: In accordance with Article Progress Schedule—Bar Chart.

#### 1.03 DETAILED PROGRESS SCHEDULE

- A. Submit Detailed Progress Schedule beginning with Notice to Proceed and continuing through Final Completion.
- B. Show the duration and sequences of activities required for complete performance of the Work reflecting means and methods chosen by Subcontractor.
- C. When accepted by Contractor, Detailed Progress Schedule will replace Preliminary Progress Schedule and become Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules.
- D. Format: In accordance with Article Progress Schedule—Bar Chart.

- E. Update weekly to reflect actual progress and occurrences to date, including weather delays.

#### 1.04 PROGRESS SCHEDULE—BAR CHART

- A. General: Comprehensive bar chart schedule, generally as outlined in Associated General Contractors of America (AGC) 580, "Construction Project Planning and Scheduling Guidelines." If a conflict occurs between the AGC publication and this Specification, this Specification shall govern.
- B. Format:
  - 1. Unless otherwise approved, white paper, 11-inch by 17-inch sheet size.
  - 2. Title Block: Show name of project and Owner, date submitted, revision or update number, and name of scheduler.
  - 3. Identify horizontally, across the top of the schedule, the time frame by year, month, and day.
  - 4. Identify each activity with a unique number and a brief description of the Work associated with that activity.
  - 5. Legend: Describe standard and special symbols used.
- C. Contents: Identify, in chronological order, those activities reasonably required to complete the Work, including as applicable, but not limited to:
  - 1. Obtaining permits, submittals for early product procurement, and long lead time items.
  - 2. Mobilization and other preliminary activities.
  - 3. Initial Site work.
  - 4. Specified Work sequences, constraints, and milestones, including substantial completion date(s).
  - 5. Subcontract work.
  - 6. Delivery dates for Owner-furnished products, as specified in Section 01 11 00, Summary of Work.
  - 7. Site work.
  - 8. Project closeout and cleanup.
  - 9. Demobilization.

#### 1.05 PROGRESS OF THE WORK

- A. Updated Progress Schedule shall reflect:
  - 1. Progress of Work to within 5 working days prior to submission.
  - 2. Approved changes in Work scope and activities modified since submission.
  - 3. Delays in submittals or resubmittals, deliveries, or Work.

4. Adjusted or modified sequences of Work.
  5. Other identifiable changes.
  6. Revised projections of progress and completion.
  7. Report of changed logic.
- B. Produce detailed sub-schedules during Project, upon request of Owner or Contractor, to further define critical portions of the Work such as facility shutdowns.
- C. If Subcontractor fails to complete activity by its latest scheduled completion date and this Failure is anticipated to extend Contract Times (or Milestones), Subcontractor shall, within 7 days of such failure, submit a written statement as to how Subcontractor intends to correct nonperformance and return to acceptable current Progress Schedule. Actions by Subcontractor to complete the Work within Contract Times (or Milestones) will not be justification for adjustment to Contract Price or Contract Times.
- D. Contractor may order Subcontractor to increase plant, equipment, labor force or working hours if Subcontractor fails to:
1. Complete a Milestone activity by its completion date.
  2. Satisfactorily execute Work as necessary to prevent delay to overall completion of Project, at no additional cost to Owner.

#### 1.06 NARRATIVE PROGRESS REPORT

- A. Format:
1. Organize same as Progress Schedule.
  2. Identify, on a cover letter, reporting period, date submitted, and name of author of report.
- B. Contents:
1. Number of days worked over the period, work force on hand, construction equipment on hand (including utility vehicles such as pickup trucks, maintenance vehicles, stake trucks).
  2. General progress of Work, including a listing of activities started and completed over the reporting period, mobilization/demobilization of subcontractors, and major milestones achieved.
  3. Subcontractor's plan for management of Site (e.g., lay down and staging areas, construction traffic), utilization of construction equipment, buildup of trade labor, and identification of potential Contract changes.
  4. Identification of new activities and sequences as a result of executed Contract changes.

5. Documentation of weather conditions over the reporting period, and any resulting impacts to the work.
6. Description of actual or potential delays, including related causes, and the steps taken or anticipated to mitigate their impact.
7. Changes to activity logic.
8. Changes to the critical path.
9. Identification of, and accompanying reason for, any activities added or deleted since the last report.
10. Steps taken to recover the schedule from Subcontractor-caused delays.

#### 1.07 SCHEDULE ACCEPTANCE

##### A. Contractor's acceptance will demonstrate agreement that:

1. Proposed schedule is accepted with respect to:
  - a. Contract Times, including Final Completion and all intermediate Milestones are within the specified times.
  - b. Specified Work sequences and constraints are shown as specified.
  - c. Specified Owner-furnished equipment or material arrival dates, or range of dates, are included.
  - d. Access restrictions are accurately reflected.
  - e. Startup and testing times are as specified.
  - f. Submittal review times are as specified.
  - g. Startup testing duration is as specified and timing is acceptable.
2. In all other respects, Contractor's acceptance of Subcontractor's schedule indicates that, in Engineer's judgment, schedule represents reasonable plan for constructing Project in accordance with the Contract Documents. Contractor's review will not make any change in Contract requirements. Lack of comment on any aspect of schedule that is not in accordance with the Contract Documents will not thereby indicate acceptance of that change, unless Subcontractor has explicitly called the nonconformance to Contractor's attention in submittal. Schedule remains Subcontractor's responsibility and Subcontractor retains responsibility for performing all activities, for activity durations, and for activity sequences required to construct Project in accordance with the Contract Documents.

##### B. Unacceptable Preliminary Progress Schedule:

1. Make requested corrections; resubmit within 5 days.
2. Until acceptable to Contractor as Baseline Progress Schedule, continue review and revision process, during which time Subcontractor shall update schedule on a weekly basis to reflect actual progress and occurrences to date.

C. Unacceptable Detailed Progress Schedule:

1. Make requested corrections; resubmit within 5 days.
2. Until acceptable to Contractor as Baseline Progress Schedule, continue review and revision process.

D. Narrative Report: All changes to activity duration and sequences, including addition or deletion of activities subsequent to Contractor's acceptance of Baseline Progress Schedule, shall be delineated in Narrative Report current with proposed Updated Progress Schedule.

1.08 ADJUSTMENT OF CONTRACT TIMES

A. Evaluation and reconciliation of Adjustments of Contract Times shall be based on the Updated Progress Schedule at the time of proposed adjustment or claimed delay.

B. Schedule Contingency:

1. Contingency, when used in the context of the Progress Schedule, is time between Subcontractor's proposed Completion Time and Contract Completion Time.
2. Contingency included in Progress Schedule is a Project resource available to both Subcontractor and Owner to meet Contract Milestones and Contract Times. Use of Schedule contingency shall be shared to the proportionate benefit of both parties.
3. Pursuant to Contingency sharing provisions of this Specification, no time extensions will be granted, nor will delay damages be paid until a delay occurs which (i) consumes all available contingency time, and (ii) extends Work beyond the Contract Completion date.

C. Float:

1. Float time is a Project resource available to both parties to meet contract Milestones and Contract Times.
2. Use of float suppression techniques such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity times are prohibited and use of float time disclosed or implied by use of alternate float-suppression techniques shall be shared to proportionate benefit of Owner and Subcontractor.

3. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs which (i) impacts Project's critical path, (ii) consumes available float or contingency time, and (iii) extends Work beyond contract completion date.

D. Claims Based on Contract Times:

1. Where Contractor has not yet rendered formal decision on Subcontractor's Claim for adjustment of Contract Times, and parties are unable to agree as to amount of adjustment to be reflected in Progress Schedule, Subcontractor shall reflect an interim adjustment in the Progress Schedule as acceptable to Contractor.
2. It is understood and agreed that such interim acceptance will not be binding on either Subcontractor or Owner, and will be made only for the purpose of continuing to schedule Work until such time as formal decision has been rendered as to an adjustment, if any, of the Contract Times.
3. Subcontractor shall revise Progress Schedule prepared thereafter in accordance with Contractor's formal decision.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 33 00  
SUBMITTAL PROCEDURES**

**PART 1 GENERAL**

**1.01 DEFINITIONS**

- A. Action Submittal: Written and graphic information submitted by Subcontractor that requires Contractor's approval.
- B. Deferred Submittal: Information submitted by Subcontractor for portions of the design which are to be submitted to permitting agency for approval prior to installation of that portion of the Work, along with Contractor's review documentation that submittal has been found to be in general conformance with Project's design.
- C. Informational Submittal: Information submitted by Subcontractor that requires Contractor's review and determination that submitted information is in accordance with the Conditions of the Contract.

**1.02 PROCEDURES**

- A. Direct submittals to Contractor at the following, unless specified otherwise:
  - 1. CH2M HILL  
Attn: Margaret Dombrowski  
E-mail: margaret.dombrowski@ch2m.com
- B. Electronic Submittals: Submittals shall be made in electronic format.
  - 1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
  - 2. Electronic files that contain more than 10 pages in PDF format shall contain internal book marking from an index page to major sections of the document.
  - 3. PDF files shall be set to open "Bookmarks and Page" view.
  - 4. Add general information to each PDF file, including title, subject, author, and keywords.
  - 5. PDF files shall be set up to print legibly at 8.5-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch. No other paper sizes will be accepted.
  - 6. Submit new electronic files for each resubmittal.

7. Include a copy of the Transmittal of Subcontractor's Submittal form, located at end of section, with each electronic file.
8. Contractor reserves the right to reject any submittal that is not electronically submitted.
9. Provide Contractor with authorization to reproduce and distribute each file as many times as necessary for Project documentation.
10. Detailed procedures for handling electronic submittals will be discussed at the preconstruction conference.

C. Transmittal of Submittal:

1. Subcontractor shall:
  - a. Review each submittal and check for compliance with Contract Documents.
  - b. Stamp each submittal with uniform approval stamp before submitting to Contractor.
    - 1) Stamp to include Project name, submittal number, Specification number, Subcontractor's reviewer name, date of Subcontractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
    - 2) Contractor will not review submittals that do not bear Subcontractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Subcontractor's Submittal form attached at end of this section.
3. Identify each submittal with the following:
  - a. Numbering and Tracking System:
    - 1) Sequentially number each submittal.
    - 2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
  - b. Specification section and paragraph to which submittal applies
  - c. Project title and Contractor's project number.
  - d. Date of transmittal.
  - e. Names of Subcontractor, Sub-Subcontractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.

2. Package submittal information by individual Specification section. Do not combine different Specification sections together in submittal package, unless otherwise directed in Specification.
  3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
  4. Index with labeled tab dividers in orderly manner
- E. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual Specification sections.
- F. Processing Time:
1. Time for review shall commence on Contractor's receipt of submittal.
  2. Contractor will act upon Subcontractor's submittal and transmit response to Subcontractor not later than 10 days after receipt, unless otherwise specified.
  3. Resubmittals will be subject to same review time.
  4. No adjustment of Contract Times or Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmittals.
- G. Resubmittals: Clearly identify each correction or change made.
- H. Incomplete Submittals:
1. Contractor will return entire submittal for Subcontractor's revision if preliminary review deems it incomplete.
  2. When any of the following are missing, submittal will be deemed incomplete:
    - a. Subcontractor's review stamp; completed and signed.
    - b. Transmittal of Subcontractor's Submittal; completed and signed.
    - c. Insufficient number of copies.
- I. Submittals not required by Contract Documents:
1. Will not be reviewed and will be returned stamped "Not Subject to Review."
  2. Contractor will keep one copy and return submittal to Subcontractor.

### 1.03 INFORMATIONAL SUBMITTALS

A. General:

1. Copies: Submit three copies, unless otherwise indicated in individual Specification section.

2. Refer to individual Specification sections for specific submittal requirements.
  3. Contractor will review each submittal. If submittal meets conditions of the Contract, Contractor will forward copy to appropriate parties. If Contractor determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Contractor will retain one copy and return remaining copy with review comments to Subcontractor, and require that submittal be corrected and resubmitted.
- B. Application for Payment.
- C. Certificates:
1. General:
    - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
    - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
  2. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual Specification section.
  3. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
  4. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual Specification sections.
- D. Construction photographs and video in accordance with Section 01 31 13, Project Coordination, and as may otherwise be required in Contract Documents.
- E. Closeout Submittals: In accordance with Section 01 77 00, Closeout Procedures.
- F. Subcontractor-design Data (related to temporary construction):
1. Written and graphic information.
  2. List of assumptions.
  3. List of performance and design criteria.
  4. Summary of loads or load diagram, if applicable.
  5. Calculations.
  6. List of applicable codes and regulations.
  7. Name and version of software.
  8. Information requested in individual Specification section.

- G. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification section.
- H. Quality Control Documentation: As required in Section 01 45 16.13, Subcontractor Quality Control.
- I. Schedules:
  - 1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.
    - a. Show for each, at a minimum, the following:
      - 1) Specification section number.
      - 2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
      - 3) Estimated date of submission to Contractor, including reviewing and processing time.
    - b. On a monthly basis, submit updated schedule to Contractor if changes have occurred or resubmittals are required.
  - 2. Schedule of Values.
  - 3. Schedule of Estimated Progress Payments.
  - 4. Progress Schedules: In accordance with Section 01 32 00, Construction Progress Documentation.
- J. Special Guarantee: Supplier's written guarantee as required in individual Specification sections.
- K. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, Contractor, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- L. Submittals Required by Laws, Regulations, and Governing Agencies:
  - 1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
  - 2. Transmit to Contractor for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Subcontractor and governing agency.
- M. Test, Evaluation, and Inspection Reports:
  - 1. General: Shall contain signature of person responsible for test or report.

2. Factory:
  - a. Identification of product and Specification section, type of inspection or test with referenced standard or code.
  - b. Date of test, Project title and number, and name and signature of authorized person.
  - c. Test results.
  - d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
  - e. Provide interpretation of test results, when requested by Contractor.
  - f. Other items as identified in individual Specification sections.
3. Field:
  - a. As a minimum, include the following:
    - 1) Project title and number.
    - 2) Date and time.
    - 3) Record of temperature and weather conditions.
    - 4) Identification of product and Specification section.
    - 5) Type and location of test, Sample, or inspection, including referenced standard or code.
    - 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
    - 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
    - 8) Provide interpretation of test results, when requested by Contractor.
    - 9) Other items as identified in individual Specification sections.

#### 1.04 SUPPLEMENTS

- A. The supplements listed below, following “End of Section”, are part of this Specification.

1. Forms: Transmittal of Subcontractor’s Submittal.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION (NOT USED)**

### **END OF SECTION**



**TRANSMITTAL OF SUBCONTRACTOR'S SUBMITTAL**  
(ATTACH TO EACH SUBMITTAL)

**CH2MHILL**

DATE: \_\_\_\_\_

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Submittal No.: \_\_\_\_\_

☐ New Submittal      ☐ Resubmittal

Project: \_\_\_\_\_

Project No.: \_\_\_\_\_

Specification Section No.: \_\_\_\_\_

**(Cover only one section with each transmittal)**

Schedule Date of Submittal: \_\_\_\_\_

FROM: \_\_\_\_\_  
Subcontractor

SUBMITTAL TYPE:    ☐ Shop Drawing  
                              ☐ Deferred

☐ Sample

☐ Informational

**The following items are hereby submitted:**

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Subcontractor hereby certifies that (i) Subcontractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By \_\_\_\_\_  
Subcontractor (Authorized Signature)

**SECTION 01 42 13**  
**ABBREVIATIONS AND ACRONYMS**

**PART 1      GENERAL**

**1.01      REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES**

- A.    Reference to standards and specifications of technical societies and reporting and resolving discrepancies associated therewith may be required herein and in the individual Specification sections.
- B.    Work specified by reference to published standard or specification of government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.
- C.    Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.
- D.    Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.
- E.    Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.
- F.    Copies of standards and specifications of technical societies:
  - 1.    Copies of applicable referenced standards have not been bound in these Contract Documents.
  - 2.    Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor's personnel, Subcontractors, Owner, and Engineer.

## 1.02 ABBREVIATIONS

- A. Abbreviations for trade organizations and government agencies: Following is a list of construction industry organizations and government agencies to which references may be made in the Contract Documents, with abbreviations used.

1.	AA	Aluminum Association
2.	AABC	Associated Air Balance Council
3.	AAMA	American Architectural Manufacturers Association
4.	AASHTO	American Association of State Highway and Transportation Officials
5.	ABMA	American Bearing Manufacturers' Association
6.	ACI	American Concrete Institute
7.	AEIC	Association of Edison Illuminating Companies
8.	AGA	American Gas Association
9.	AGMA	American Gear Manufacturers' Association
10.	AI	Asphalt Institute
11.	AISC	American Institute of Steel Construction
12.	AISI	American Iron and Steel Institute
13.	AITC	American Institute of Timber Construction
14.	ALS	American Lumber Standards
15.	AMCA	Air Movement and Control Association
16.	ANSI	American National Standards Institute
17.	APA	APA – The Engineered Wood Association
18.	API	American Petroleum Institute
19.	APWA	American Public Works Association
20.	AHRI	Air-Conditioning, Heating, and Refrigeration Institute
21.	ASA	Acoustical Society of America
22.	ASABE	American Society of Agricultural and Biological Engineers
23.	ASCE	American Society of Civil Engineers
24.	ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
25.	ASME	American Society of Mechanical Engineers
26.	ASNT	American Society for Nondestructive Testing
27.	ASSE	American Society of Sanitary Engineering
28.	ASTM	ASTM International
29.	AWI	Architectural Woodwork Institute
30.	AWPA	American Wood Preservers' Association
31.	AWPI	American Wood Preservers' Institute
32.	AWS	American Welding Society
33.	AWWA	American Water Works Association

34.	BHMA	Builders Hardware Manufacturers' Association
35.	CBM	Certified Ballast Manufacturer
36.	CDA	Copper Development Association
37.	CGA	Compressed Gas Association
38.	CISPI	Cast Iron Soil Pipe Institute
39.	CMAA	Crane Manufacturers' Association of America
40.	CRSI	Concrete Reinforcing Steel Institute
41.	CS	Commercial Standard
42.	CSA	Canadian Standards Association
43.	CSI	Construction Specifications Institute
44.	DIN	Deutsches Institut für Normung e.V.
45.	DIPRA	Ductile Iron Pipe Research Association
46.	EIA	Electronic Industries Alliance
47.	EJCDC	Engineers Joint Contract Documents' Committee
48.	ETL	Electrical Test Laboratories
49.	FAA	Federal Aviation Administration
50.	FCC	Federal Communications Commission
51.	FDA	Food and Drug Administration
52.	FEMA	Federal Emergency Management Agency
53.	FIPS	Federal Information Processing Standards
54.	FM	FM Global
55.	Fed. Spec.	Federal Specifications (FAA Specifications)
56.	FS	Federal Specifications and Standards (Technical Specifications)
57.	GA	Gypsum Association
58.	GANA	Glass Association of North America
59.	HI	Hydraulic Institute
60.	HMI	Hoist Manufacturers' Institute
61.	IBC	International Building Code
62.	ICBO	International Conference of Building Officials
63.	ICC	International Code Council
64.	ICEA	Insulated Cable Engineers' Association
65.	IFC	International Fire Code
66.	IEEE	Institute of Electrical and Electronics Engineers, Inc.
67.	IESNA	Illuminating Engineering Society of North America
68.	IFI	Industrial Fasteners Institute
69.	IGMA	Insulating Glass Manufacturer's Alliance
70.	IMC	International Mechanical Code
71.	INDA	Association of the Nonwoven Fabrics Industry
72.	IPC	International Plumbing Code
73.	ISA	International Society of Automation

74.	ISO	International Organization for Standardization
75.	ITL	Independent Testing Laboratory
76.	JIC	Joint Industry Conferences of Hydraulic Manufacturers
77.	MIA	Marble Institute of America
78.	MIL	Military Specifications
79.	MMA	Monorail Manufacturers' Association
80.	MSS	Manufacturer's Standardization Society
81.	NAAMM	National Association of Architectural Metal Manufacturers
82.	NACE	NACE International
83.	NBGQA	National Building Granite Quarries Association
84.	NEBB	National Environmental Balancing Bureau
85.	NEC	National Electrical Code
86.	NECA	National Electrical Contractor's Association
87.	NEMA	National Electrical Manufacturers' Association
88.	NESC	National Electrical Safety Code
89.	NETA	InterNational Electrical Testing Association
90.	NFPA	National Fire Protection Association
91.	NHLA	National Hardwood Lumber Association
92.	NICET	National Institute for Certification in Engineering Technologies
93.	NIST	National Institute of Standards and Technology
94.	NRCA	National Roofing Contractors Association
95.	NRTL	Nationally Recognized Testing Laboratories
96.	NSF	NSF International
97.	NSPE	National Society of Professional Engineers
98.	NTMA	National Terrazzo and Mosaic Association
99.	NWWDA	National Wood Window and Door Association
100.	OSHA	Occupational Safety and Health Act (both Federal and State)
101.	PCI	Precast/Prestressed Concrete Institute
102.	PEI	Porcelain Enamel Institute
103.	PPI	Plastic Pipe Institute
104.	PS	Product Standards Section-U.S. Department of Commerce
105.	RMA	Rubber Manufacturers' Association
106.	RUS	Rural Utilities Service
107.	SAE	SAE International
108.	SDI	Steel Deck Institute
109.	SDI	Steel Door Institute
110.	SJI	Steel Joist Institute
111.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association

112. SPI	Society of the Plastics Industry
113. SSPC	The Society for Protective Coatings
114. STI/SPFA	Steel Tank Institute/Steel Plate Fabricators Association
115. SWI	Steel Window Institute
116. TEMA	Tubular Exchanger Manufacturers' Association
117. TCA	Tile Council of North America
118. TIA	Telecommunications Industry Association
119. UBC	Uniform Building Code
120. UFC	Uniform Fire Code
121. UL	Underwriters Laboratories Inc.
122. UMC	Uniform Mechanical Code
123. USBR	U.S. Bureau of Reclamation
124. WCLIB	West Coast Lumber Inspection Bureau
125. WI	Wood Institute
126. WWPA	Western Wood Products Association

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 45 16.13**  
**SUBCONTRACTOR QUALITY CONTROL**

**PART 1 GENERAL**

**1.01 REFERENCES**

A. The following is a list of standards which may be referenced in this Section:

1. ASTM International (ASTM):
  - a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
  - b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

**1.02 DEFINITIONS**

A. Subcontractor Quality Control (CQC): The means by which Subcontractor ensures that the construction, to include that performed by sub-subcontractors and suppliers, complies with the requirements of the Contract.

**1.03 SUBMITTALS**

A. Informational Submittals:

1. CQC Plan: Submit, not later than 30 days after receipt of Notice to Proceed.
2. CQC Report: Submit, weekly, an original and one copy in report form.

**1.04 OWNER'S QUALITY ASSURANCE**

A. All Work is subject to Owner's quality assurance inspection and testing at all locations and at all reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.

B. Owner's quality assurance inspections and tests are for the sole benefit of Owner and do not:

1. Relieve Subcontractor of responsibility for providing adequate quality control measures;
2. Relieve Subcontractor of responsibility for damage to or loss of the material before acceptance;
3. Constitute or imply acceptance; or;

- 4. Affect the continuing rights of Owner after acceptance of the completed Work.
- C. The presence or absence of a quality assurance inspector does not relieve Subcontractor from any Contract requirement.
- D. Promptly furnish all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Contractor.
- E. Contractor may charge Subcontractor for any additional cost of inspection or test when Work is not ready at the time specified by Subcontractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 GENERAL**

- A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents.
- B. Maintain complete inspection records and make them available at all times to Owner and Contractor.
- C. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the Contract Documents. The system shall cover all construction and demolition operations, both onsite and offsite, including Work by sub-subcontractors, fabricators, suppliers and purchasing agents, and shall be keyed to the proposed construction sequence.

**3.02 COORDINATION MEETING**

- A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Contractor and Owner to discuss the quality control system.

- B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite Work, and the interrelationship of Subcontractor's management and control with the Contractor's Quality Assurance.
- C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Subcontractor.

### 3.03 QUALITY CONTROL ORGANIZATION

#### A. CQC System Manager:

- 1. Designate an individual within Subcontractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Subcontractor.
- 2. CQC System Manager may perform other duties on the Project.
- 3. CQC System Manager shall be an experienced construction person, with a minimum of 3 years construction experience on similar type Work.
- 4. CQC System Manager shall report to the Subcontractor's project manager or someone higher in the organization. Project manager in this context shall mean the individual with responsibility for the overall quality and production management of the Project.
- 5. CQC System Manager shall be onsite during construction; periods of absence may not exceed 2 days at any one time.
- 6. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.

#### B. CQC Staff:

- 1. Designate a CQC staff, available at the Site at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members shall be subject to acceptance by Contractor.
- 2. CQC staff shall take direction from CQC System Manager in matters pertaining to QC.
- 3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC

responsibilities and must be allowed sufficient time to carry out these responsibilities.

4. The actual strength of the CQC staff may vary during any specific Work period to cover the needs of the Project. Add additional staff when necessary for a proper CQC organization.

- C. Organizational Changes: Obtain Contractor's acceptance before replacing any member of the CQC staff. Requests for changes shall include name, qualifications, duties, and responsibilities of the proposed replacement.

### 3.04 QUALITY CONTROL PHASING

- A. CQC shall include at least three phases of control to be conducted by CQC System Manager for all definable features of Work, as follows:

1. Preparatory Phase:
  - a. Notify Contractor at least 48 hours in advance of beginning any of the required action of the preparatory phase.
  - b. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager shall instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
  - c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.
  - d. Perform prior to beginning Work on each definable feature of Work:
    - 1) Review applicable Contract Specifications.
    - 2) Review applicable Contract Drawings.
    - 3) Verify that all materials and/or equipment have been tested, submitted, and approved.
    - 4) Verify that provisions have been made to provide required control inspection and testing.
    - 5) Examine the Work area to verify that all required preliminary Work has been completed and is in compliance with the Contract.
    - 6) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
    - 7) Review the appropriate activity hazard analysis to verify safety requirements are met.

- 8) Review procedures for constructing the Work, including repetitive deficiencies.
  - 9) Document construction tolerances and workmanship standards for that phase of the Work.
  - 10) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Contractor.
2. Initial Phase:
- a. Accomplish at the beginning of a definable feature of Work:
    - 1) Notify Contractor at least 48 hours in advance of beginning the initial phase.
    - 2) Perform prior to beginning Work on each definable feature of Work:
      - a) Review minutes of the preparatory meeting.
      - b) Check preliminary Work to verify compliance with Contract requirements.
      - c) Verify required control inspection and testing.
      - d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
      - e) Resolve all differences.
      - f) Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
    - 3) Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
    - 4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.
3. Follow-up Phase:
- a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing, until completion of the particular feature of Work.
  - b. Daily checks shall be made a matter of record in the CQC documentation and shall document specific results of inspections for all features of Work for the day or shift.
  - c. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.

4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Contractor if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

### 3.05 SUBCONTRACTOR QUALITY CONTROL PLAN

#### A. General:

1. Plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used.
2. An interim plan for the first 30 days of operation will be considered.
3. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
4. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.

#### B. Content:

1. Plan shall cover the intended CQC organization for the entire Contract and shall include the following, at a minimum:
  - a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Paragraph QC Phasing) for all aspects of the Work specified.
  - b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
  - c. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of sub-subcontractors, offsite fabricators, suppliers and purchasing agents.
  - d. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.

- e. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation
  - f. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
  - g. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.
- C. Acceptance of Plans: Acceptance of the Subcontractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner reserves the right to require Subcontractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.
- D. Notification of Changes: After acceptance of the CQC plan, Subcontractor shall notify Contractor, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Contractor.

### 3.06 SUBCONTRACTOR QUALITY CONTROL REPORT

- A. As a minimum, prepare a CQC report for every 7 calendar days. Account for all days throughout the life of the Contract. Reports shall be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.
- B. Maintain current records of quality control operations, activities, and tests performed, including the Work of sub-subcontractors and suppliers.
- C. Records shall be on an acceptable form and shall be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:
- 1. Subcontractor/sub-subcontractor and their areas of responsibility.
  - 2. Operating equipment with hours worked, idle, or down for repair.
  - 3. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
  - 4. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, and Follow-up). List deficiencies noted along with corrective action.
  - 5. Material received with statement as to its acceptability and storage.

6. Identify submittals reviewed, with Contract reference, by whom, and action taken.
7. Offsite surveillance activities, including actions taken.
8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
9. List instructions given/received and conflicts in Drawings and/or Specifications.
10. Subcontractor's verification statement.
11. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
12. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

### 3.07 SUBMITTAL QUALITY CONTROL

- A. Submittals shall be as specified in Section 01 33 00, Submittal Procedures. The CQC organization shall be responsible for certifying that all submittals are in compliance with the Contract requirements. Owner will furnish copies of test report forms upon request by Subcontractor. Subcontractor may use other forms as approved.

### 3.08 TESTING QUALITY CONTROL

- A. Testing Procedure:
  1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
    - a. Verify testing procedures comply with contract requirements.
    - b. Verify facilities and testing equipment are available and comply with testing standards.
    - c. Check test instrument calibration data against certified standards.
    - d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
    - e. Documentation:
      - 1) Record results of all tests taken, both passing and failing, on the CQC report for the date taken.
      - 2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.

- 3) Actual test reports may be submitted later, if approved by Contractor, with a reference to the test number and date taken.
- 4) Provide directly to Contractor an information copy of tests performed by an offsite or commercial test facility. Test results shall be signed by an engineer registered in the state where the tests are performed.
- 5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.

- B. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel shall meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing shall be certified by the American Concrete Institute (ACI).

### 3.09 COMPLETION INSPECTION

- A. CQC System Manager shall conduct an inspection of the Work at the completion of all Work or any milestone established by a completion time stated in the Contract.
- B. Punchlist:
1. CQC System Manager shall develop a punchlist of items which do not conform to the Contract requirements.
  2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
  3. CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Owner.
  4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the Project is divided into increments by separate completion dates.

### END OF SECTION

**SECTION 01 50 00**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 REFERENCES**

- A. The following is a list of organizations with standards that are referenced in this section:
  - 1. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
  - 2. Occupational Safety & Health Administration (OSHA).
  - 3. U.S. Environmental Protection Agency (USEPA).

**1.02 SUBMITTALS**

- A. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
- B. All pre-mobilization plans described in Section 01 31 13, Project Coordination.

**1.03 MOBILIZATION**

- A. Mobilization shall include, but not be limited to, these principal items:
  - 1. Obtaining required permits.
  - 2. Moving Subcontractor's field office and equipment.
  - 3. Installing temporary construction power, wiring, and lighting facilities for Contractor and Subcontractor.
  - 4. Providing onsite communication facilities, including telephones for Contractor and Subcontractor.
  - 5. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies for Contractor and Subcontractor.
  - 6. Arranging for and erection of Subcontractor's work and storage yard
  - 7. Posting OSHA required notices and establishing safety programs and procedures.
  - 8. Having Subcontractor's superintendent at Site full time.
  - 9. Establishing decontamination facilities.
  - 10. Establishing erosion control measures in addition to the silt fence around the perimeter of the Site, as needed.

1.04 PROTECTION OF WORK AND PROPERTY

- A. Keep Contractor informed of near misses, incidents, onsite accidents and related claims.
- B. Use of Explosives: No blasting or use of explosives will be allowed onsite.

1.05 VEHICULAR TRAFFIC

- A. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles. Include this Traffic Routing Plan as part of the Work Plan described in Section 01 31 13, Project Coordination.
- B. Adhere to Traffic Routing Plan reviewed and accepted by Contractor. Changes to this plan shall be made only by written approval of Contractor. Secure approvals for necessary changes so as not to delay progress of the Work.

**PART 2 PRODUCTS**

2.01 GENERAL

- A. Ownership of all equipment furnished by Subcontractor will remain that of Subcontractor, except for items reasonably considered to be consumable items or that would be expected to have limited value after 18 months of usage.

2.02 CONTRACTOR'S NEW FIELD OFFICE

- A. Furnish equipment specified for exclusive use of Contractor and its representatives. Provide submittal describing Contractor's field office and contents.
- B. Equipment furnished shall be new or like new in appearance and function.
- C. Minimum Features:
  - 1. 110-volt lighting and wall plugs.
  - 2. Fluorescent ceiling lights.
  - 3. Electric heating and self-contained air conditioning unit, properly sized for Project locale and conditions. Provide ample electric power to operate installed systems.
  - 4. OSHA-compliant railed stairways and landings at entrances.

5. Exterior Door(s):
    - a. Number: Two.
    - b. Type: Solid core.
    - c. Lock(s): Cylindrical; keyed alike.
  6. Number of Windows: Seven.
  7. Minimum Interior Height: 8 feet.
- D. Trailer Type Mobile Structure: One.
- E. Floor Space: Minimum 660 square feet.
- F. All-metal frame; all-metal exterior, sides, and roof; and insulated double walls, floor, and roof. Trailer shall be anchored for high wind conditions.
- G. Security guard screens on all windows.
- H. Number of Private Offices: Two, 10 feet by 10 feet.
- I. Storage Room: One, 6 feet by 8 feet, with door with cylinder lock, keyed differently than exterior door locks. Provide two sets of keys.
- J. Shelving in Storage Room: 72 linear feet, 18 inches deep.
- K. Blinds or drapes on all windows.
- L. Work Surface: Two, one in each office. 36 inches by 10 feet at desk height of 29 inches from floor, mounted to wall and floor.
- M. Office Equipment-General:
1. Paper Towel Dispenser with Towels: One.
  2. Refrigerator, small: One, between 3.0 and 4.0 cubic feet.
  3. Computer Chair: Six with the following characteristics:
    - a. Five castor base.
    - b. Adjustable height.
    - c. Swivels.
    - d. Locking back.
    - e. Adjustable seat back for height and angle.
    - f. Adjustable arms.
  4. Folding Table: Two, 36 inches by 96 inches.
  5. Steel Folding Chairs: Ten.
  6. Drafting Table: One, 3 feet by 6 feet.
  7. Drafting Stool: One, swivel, with back support.
  8. Four-Drawer Steel File Cabinet with Lock: Two.

9. Bookcase: Two, 36 inches wide by 48 inches high.
10. Wastepaper Basket: Three.
11. Standing Coat Rack: Three.
12. Dry Erase Whiteboard: One, 48 inches wide by 72 inches long.
13. Dry Erase Markers: Twelve, various colors, including two dry erase marker erasers.
14. First Aid Kit: One.
15. Carbon Dioxide (10-Pound) Fire Extinguisher: Three.
16. Telephone: Two, with one intercom line and two incoming/outgoing lines, Touch-Tone, with conference speaker, and 12-foot coiled handset cord.
17. Answering Machine: AT&T; Model 1726.
18. Copier Service: Lease of Canon NP6545 (or equal) copier, with document feeding, auto duplexing, and stapler/sorter. Copier will be capable of producing both 8-1/2-inch by 11-inch, and 11-inch by 17-inch copies. Service to include all maintenance and repair to keep copier operational. Lease is up at the closeout of the Subcontract.
19. Mop and Bucket, Broom with Dustpan.
20. Water Cooler and Service: One cooler and replacement 5-gallon water bottle service for duration of Subcontract.

N. Computer Hardware:

1. Dell Desktop Computer. Provide one computer meeting the following specifications:
  - a. Optiplex 755 Desktop: Intel® Core 2 Duo Processor (2.33 GHz).
  - b. Operating System: Genuine Windows® XP Home Edition.
  - c. Memory: 4GB at 667MHz.
  - d. Hard Drive: 160GB Ultra ATA/100 7200RPM Hard Drive.
  - e. CD or DVD Drive: Single Drive, 16X CD/DVD burner (DVD+/- RW) w/double layer write capacity.
  - f. Floppy Drive: No Floppy Drive Included.
  - g. Monitors: 19-inch LCD.
  - h. Video Memory: 256 MB ATI Radeon 2400XT.
  - i. Modem: 56K PCI Data Fax Modem.
  - j. Keyboard and Mouse Bundles: Dell USB Keyboard and Dell 2-button Scroll Mouse.
  - k. Office Productivity Software (Pre-Installed): Microsoft Office includes Word, Excel, Project, and Outlook email.
  - l. Network Interface: 10/100/1000 NIC.
  - m. Hardware Warranty: 1 year Ltd Warranty, 1 year At-Home Service, and 1 year HW Warranty Support.

- n. Miscellaneous: Award Winning Service & Support for duration of Subcontract.
  - o. Anti-Virus/Security Suite (Pre-Installed): No Security Subscription.
  - p. Broadband Internet Service Provider.
  - q. Limited Warranty Program: 1 year limited parts/labor/support.
  - r. Surge Protector: Belkin Surge Master Surge Suppressor.
  - s. AntiVirus Software: Norton AntiVirus 90-day introductory offer.
  - 2. Power supply surge protector, one for the computer and one additional; rated at 15 amps minimum.
  - 3. Printer/fax: Provide one, HP Office Jet 5610, with postscript and additional memory.
  - 4. Wireless Router, one: Linksys 2.4 GHz Wireless-G Access Point, Model WAP54G.
  - 5. Ensure that all equipment is set up, connected properly and is functional to the satisfaction of the Contractor.
  - 6. Provide any and all user IDs and passwords required to access and change settings of computer equipment to the Contractor.
  - 7. Maintenance service agreements for all hardware for duration of Subcontract.
- O. Computer Software, Latest Versions:
- 1. Microsoft Windows XP Pro.
  - 2. Microsoft Office XP Pro.
  - 3. Microsoft Outlook.
  - 4. Microsoft Project.
  - 5. Adobe Acrobat Professional.
- P. Completely install all furniture and equipment described herein after consultation with the Contractor to determine installation location.

## 2.03 CHAIN-LINK FENCING

- A. The Subcontractor shall provide and install chain-link fencing and gates around the perimeter of the work areas at the locations shown on figures and will remain installed after Project completion.
- B. New chain-link fencing provided and installed by the Subcontractor shall meet the following requirements:
  - 1. Fencing shall be 6-feet in height.
  - 2. Fencing shall be reasonably sturdy.

3. Two swing gates shall be installed in the fencing along East Seahorse Drive at the locations shown on Drawings. The swing gates shall be a minimum of 24 feet wide and the Subcontractor shall provide a chain suitable for padlocking each gate.
4. The Subcontractor shall attempt to minimize impacts to city streets and property where the fencing is installed.

#### 2.04 SILT FENCING

- A. The subcontractor shall provide and install silt-fencing around the perimeter of the work areas at the locations shown on Drawings.
- B. New silt-fencing provided and installed by the Subcontractor shall meet the following requirements:
  1. Silt fence is to consist of geotextile which is Ultraviolet (UV) inhibited and attached to support posts spaced 5 to 10 feet apart. Attach posts to chain-link fencing where possible.
  2. Geotextile is to be fastened to each support post in a manner that will not result in tearing of geotextile when fence is subjected to service loads.
  3. Bottom edge of silt fence shall be installed in toe trench and backfilled in a way that securely anchors geotextile in trench.
  4. Subcontractor shall promptly repair or replace silt fence that becomes damaged during installation.

#### 2.05 SIGNS

- A. Project Sign:
  1. Provide and maintain one, 8-foot wide by 4-foot high sign constructed of  $\frac{3}{4}$ -inch exterior high density overlaid plywood. Sign shall bear name of Project, Owner, Contractor, Engineer, and other participating agencies. Lettering shall be blue applied on a white background by an experienced sign painter. Paint shall be exterior type enamel. Information to be included will be provided by Contractor.
  2. Place sign near primary entrance gate and affix to chain link fence or provide independent support.
- B. Hard Hat Area:
  1. Two. Post one at both primary and secondary construction entrances.

2.06 CONTRACTOR'S PERSONAL PROTECTIVE EQUIPMENT

- A. Allocate up to \$2,500 to provide specialized personal protective equipment to the Contractor, as requested by the Contractor.

**PART 3 EXECUTION**

3.01 CONTRACTOR'S FIELD OFFICES

- A. Construction of Office Trailer and Parking Area:
  - 1. Place a minimum 6-inches of aggregate meeting Illinois DOT CA 3 within area shown on Drawings.
  - 2. Provide suitable transition from asphalt paved surface to Office Trailer and Parking Area for vehicular access.
  - 3. Maintain Office Trailer and Parking Area by placing additional aggregate to maintain minimum 6-inches thickness as needed.
- B. Locate where directed by Contractor; level, block, tie down, skirt, provide stairways, and relocate when necessary and approved. Construct on proper foundations, provide proper surface drainage and connections for utility services.
- C. Raise grade under field office, as necessary, to elevation adequate to avoid flooding.
- D. Provide sanitary facilities in compliance with state and local health authorities: Sanitary facilities to include a portable hand-wash station.
- E. Exterior Door Keys: Furnish two sets of keys.
- F. Telephone:
  - 1. Provide number of incoming lines equal to that specified for telephone type.
  - 2. Provide separate modem line if DSL is not available.
  - 3. Provide 3 jacks for telephone; locate as directed by Contractor.
  - 4. Provide all wiring necessary for a completed telephone system.
- G. Computer: Provide all required connecting cables and plugs.
- H. Telecommunications:
  - 1. Provide broadband internet connection with minimum of five live portable computer (PC) ports.

2. Provide all appropriate jacks, CAT-5 patch cords, wiring, and equipment required for a complete telecommunications system.
  3. Arrange and provide for telecommunication service for use during construction. Pay costs of installation, maintenance, and monthly service of internet connection until Subcontract closeout.
- 
- I. Maintain in good repair and appearance, and provide weekly cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.
  - J. Replenish, as needed, facsimile paper, copier paper and toner, computer paper, printer ribbon/toner/ink cartridges, and computer compact disks.
  - K. Setup and provide monthly electric service to Contractor's two trailers for the duration of the Subcontract period.
  - L. Setup and provide monthly telephone service to Contractor's two trailers for the duration of the Subcontract period, including one separate telephone to each trailer and one fax line to the trailer provided by Subcontractor.

### 3.02 TEMPORARY UTILITIES

- A. Power: Determine type and amount available and make arrangements for obtaining temporary electric power service, metering equipment, and pay all costs for electric power used during Subcontract period.
- B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.
- C. Heating, Cooling, and Ventilating:
  1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work.
  2. Provide adequate forced air ventilation of enclosed areas to prevent hazardous accumulations of dust, fumes, vapors, or gases.
  3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.
  4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.

- D. Water: Make arrangements for and bear costs of providing water required for construction purposes, including decontamination, and for drinking by construction personnel during construction.
- E. Sanitary and Personnel Facilities: Provide and maintain facilities for Contractor's, Subcontractor's and Sub-subcontractors' employees. Service, clean, and maintain facilities and enclosures.
- F. Telephone Service: Subcontractor: Arrange and provide onsite telephone service for use during construction. Pay costs of installation and monthly bills until Subcontract closeout.
- G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

### 3.03 PROTECTION OF WORK AND PROPERTY

#### A. General:

- 1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners, others performing work at the site, and the public.
- 2. No residence or business shall be cut off from vehicular traffic, unless special arrangements have been made.
- 3. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
- 4. Where not slated for demolition, protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
- 5. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
- 6. In areas where Subcontractor's operations are adjacent to or near a utility that will remain in service, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Subcontractor.
- 7. Notify property owners and utility offices that may be affected by construction operation at least 3 days in advance by calling the Illinois utility one-call number (JULIE) or utility owner directly as appropriate. Before exposing a utility, obtain utility owner's permission. Should

service of utility be interrupted due to Subcontractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.

8. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers or other sewer structures.
9. Maintain original Site drainage wherever possible.

B. Site Security:

1. If Subcontractor removes fencing along the site perimeter in order to complete the Work, Subcontractor will install and maintain a temporary replacement fence that does not interfere with the Work so that site access is restricted at all times. Once the Work in that area has been completed, Subcontractor will remove the temporary fence and reinstall fencing along the original alignment.
2. Subcontractor will install and maintain orange snow fencing around any open excavation, pit, or tunnel that is greater than one foot in depth and is not actively being excavated or demolished. This includes at the end of every workday even if the work will resume at that location the next day.
3. Subcontractor will provide 24-hour security at the site during the Work. Owner and Contractor assume no liability for Subcontractor-supplied equipment or materials or recyclable materials already present at the Site that the Subcontractor takes possession of as described in the Subcontract Documents.
4. Provide and maintain additional temporary security fences as necessary to protect the Work.

C. Barricades and Lights:

1. Provide as required by applicable federal, state, and local regulations and in sufficient quantity to safeguard public and the Work.
2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Subcontractor's employees, other employer's employees, and others who may be affected by the Work.
3. Provide to protect existing facilities and adjacent properties from potential damage.
4. Locate to enable access by facility operators and property owners.
5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.

6. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.
7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

D. Signs and Equipment:

1. Provide at obstructions, such as material piles and equipment.
2. Use to alert general public of construction hazards, which would include surface irregularities, unramped walkways, grade changes, and trenches or excavations in roadways and in other public access areas.

E. Trees and Plantings: To the extent possible, the Subcontractor shall minimize the impact of remedial activities to existing flora.

F. Existing Structures:

1. Where Subcontractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Subcontractor's operations, obtain approval of property owner and Contractor.
2. Replace items removed in their original location and a condition equal to or better than original.

G. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

### 3.04 TEMPORARY CONTROLS

A. Air Pollution Control:

1. Minimize air pollution from construction operations.
2. Burning: Of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
3. Conduct operations of dumping debris and of carrying debris away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.

B. Noise Control: Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.

C. Water Pollution Control:

1. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning" and "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control-Surface Mining in Eastern United States."
2. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period in accordance with the approved Water Control Plan.

1. Take precautions not to damage existing erosion control devices (if present), including the silt fence installed around the Site perimeter.
2. During times that Subcontractor is mobilized to site, Subcontractor shall inspect the entire perimeter silt fence once per week and repair any damage regardless of cause of damage.

3.05 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, or operations of other subcontractors.

3.06 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Provide snow removal to facilitate normal vehicular traffic on public or private roads affected by construction. Perform snow removal promptly and efficiently by means of suitable equipment whenever necessary for safety, and as may be directed by proper authority.
- E. Notify fire department and police department before closing street or portion thereof. Notify said departments when streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without written permission from the fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish night emergency telephone numbers to police and fire departments.
- F. Coordinate traffic routing with that of others working in same or adjacent areas.

### 3.07 CLEANING DURING CONSTRUCTION

- A. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.
- B. At least once daily, and as directed by Contractor, brush sweep entry drive, roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

### 3.08 DEMOBILIZATION

- A. Upon substantial completion of Work, Subcontractor shall demobilize from the Former Eagle Zinc site. Demobilization includes:
  - 1. Disconnection of utilities set up by Subcontractor, unless otherwise directed by Contractor.
  - 2. Removal of Subcontractor's temporary offices and any supply facilities from the Site.
  - 3. Removal of Subcontractor's equipment, supplies, materials, and personnel from the Site.

EAGLE ZINC  
US EPA

- B. Subcontractor shall complete closeout punchlist described in Section 01 77 00, Closeout Procedures.

**END OF SECTION**

**SECTION 01 57 13**  
**TEMPORARY EROSION AND SEDIMENT CONTROL**

**PART 1 GENERAL**

**1.01 WORK OF THIS SECTION**

- A. This section covers work necessary for stabilization of soil to prevent erosion during and after construction and land disturbing activities. The Contractor shall prepare an Erosion and Sediment Control Plan detailing the labor, materials, tools, and equipment that will be used to perform the work. The Plan shall also detail erosion and sediment control inspections and proposed frequency of inspections. The work shall include the furnishing of all labor, materials, tools, and equipment to perform the work and services necessary as herein specified and as indicated on the Drawings. This shall include installation, maintenance, and final removal of all temporary soil erosion and sediment control measures.
- B. The minimum areas requiring soil erosion and sediment control measures are indicated on the Drawings. The right is reserved to modify the use, location, and quantities of soil erosion and sediment control measures based on activities of the Subcontractor and as the Contractor considers to be in the best interest of the Owner.
- C. See additional information noted on the Drawings.

**1.02 GENERAL**

- A. Soil erosion stabilization and sedimentation control consist of the following elements:
  - 1. Maintenance of existing permanent or temporary storm drainage piping and channel systems, as necessary.
  - 2. Construction of new permanent and temporary storm drainage piping and channel systems, as necessary.
  - 3. Construction of temporary erosion control facilities such as silt fences, check dams, etc.
  - 4. Topsoil and Seeding:
    - a. Placement and maintenance of Temporary Seeding on all areas disturbed by construction.
    - b. Placement of permanent topsoil, fertilizer, and seed, etc., in all areas not occupied by structures or pavement, unless shown otherwise.

5. Soil Stabilization Seeding: Placement of fertilizer and seed, etc., in areas as specified hereinafter.
- B. The Subcontractor shall be responsible for phasing Work in areas allocated for his exclusive use during this Project, including any proposed stockpile areas, to restrict sediment transport. This will include installation of any temporary erosion control devices, ditches, or other facilities.
  - C. The areas set aside for the Subcontractor's use during the Project may be temporarily developed to provide satisfactory working, staging, and administrative areas for his exclusive use. Preparation of these areas shall be in accordance with other requirements contained within these Specifications and shall be done in a manner to both control all sediment transport away from the area.
  - D. All permanent stockpiles shall be seeded with soil stabilization seed and protected by construction of silt fences and permanent 2-foot, minimum depth, ditches, completely surrounding stockpiles and located within 10 feet of the toes of the stockpile slopes.
  - E. Sediment transport and erosion from working stockpiles shall be controlled and restricted from moving beyond the immediate stockpile area by construction of temporary toe-of-slope ditches and accompanying silt fences, as necessary. The Subcontractor shall keep these temporary facilities in operational condition by regular cleaning, regrading, and maintenance. Stockpiles remaining in place longer than 14 calendar days shall be considered permanent stockpiles for purposes of erosion and sediment control.
  - F. The Subcontractor shall maintain all elements of the Soil Erosion Stabilization and Sedimentation Control systems and facilities to be constructed during this Project for the duration of his activities on this Project. Formal inspections made jointly by the Subcontractor and the Contractor shall be conducted in accordance with Montgomery County standards to evaluate the Subcontractor's conformance to the requirements of both these Specifications.
  - G. All silt traps shall be cleaned of collected sediment after every storm or as determined from the biweekly inspections. Cleaning shall be done in a manner that will not direct the sediment into the storm drain piping system. Removed sediment shall be taken to an area selected by the Contractor where it can be cleaned of sticks and debris, then allowed to dry. Final sediment and debris disposal shall be onsite as designated by Contractor.
  - H. Replacement or repair of failed or overloaded silt fences, check dams, or other temporary erosion control devices shall be accomplished by the Subcontractor within 1 days after receiving written notice from the Contractor.

- I. Unpaved earth drainage ditches shall be regraded as needed to maintain original grade and remove sediment buildup. If a ditch becomes difficult to maintain, the Subcontractor shall cooperate with the Contractor and install additional erosion control devices such as check dams, temporary paving, or silt fences as directed by the Contractor.
- J. If the Subcontractor has not complied with any of the above maintenance efforts to the satisfaction of the Contractor within 2 working days after receiving written notification from the Contractor, the Owner shall have the prerogative of engaging others to perform any needed maintenance or cleanup, including removal of accumulated sediment at constructed erosion control facilities, and deduct from the Subcontractor's monthly partial payment the costs for such efforts plus a \$500 administration fee.

### 1.03 SUBMITTALS

- A. Submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.
- B. In addition, the Subcontractor shall provide the following specific information:
  - 1. Certificates of inspection of seed by state or federal authorities and copies of delivery invoices or other proof of quantities of fertilizer.

## PART 2 PRODUCTS

### 2.01 PERMANENT SEED

- A. Seed for those areas where topsoil is to be applied shall be 75 percent Kentucky 31, and 25 percent Annual Ryegrass.

### 2.02 SOIL STABILIZATION AND TEMPORARY SEED

- A. Summer seed mix shall be 50 percent by weight Tall Fescue, 30 percent by weight Sericea Lespedeza, and 20 percent by weight German Millet.
- B. Winter seed mix shall be 50 percent by weight Tall Fescue, 30 percent by weight Sericea Lespedeza, 15 percent by weight Annual Ryegrass, and 5 percent by weight Redtop.

### 2.03 TOPSOIL

- A. Topsoil shall be as specified under Section 31 23 23, Fill and Backfill.

2.04 FERTILIZER

- A. Fertilizer shall be commercial, chemical type, uniform in composition, free-flowing, conforming to state and federal laws, and suitable for application with equipment designed for that purpose.
- B. Fertilizer shall have a minimum percentage of plant food by weight for the following: Permanent fertilizer mix shall be 10 percent nitrogen, 10 percent phosphoric acid, and 10 percent potash.

2.05 LIME

- A. Ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes through a 100-mesh sieve and 90 percent passes a 20-mesh sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

2.06 STRAW MULCH

- A. Threshed straw of oats, wheat, barley, or rye, free from seed of noxious weeds, or clean salt hay.

2.07 ROCK DITCH CHECK

- A. Rock Ditch Checks shall meet the requirements set as shown on the Drawings.

2.08 EROSION MAT

- A. Erosion mats are to be installed in the southern drainage channel as shown on the Drawings.
- B. Erosion mats shall be polymeric and/or natural fiber mat capable of providing protection against erosive water velocities in drainage channels.
- C. Erosion Mats are non-degradable products that enhance the ability of living plants to stabilize soils.
- D. At least 14 days prior to starting erosion mat installation, the Subcontractor shall also submit the manufacturer's recommended method of installation for the site-specific conditions shown on the Drawings to the Contractor for approval.

## **PART 3      EXECUTION**

### **3.01      GENERAL**

- A.    The Subcontractor shall install erosion and sediment control measures and maintain in accordance with the Drawings. The sequence of construction shown on the Drawings is made a part of these Contract Documents.
- B.    The Subcontractor shall provide and maintain Temporary Seeding at all times.

### **3.02      SEEDING**

#### **A.    General:**

- 1.    The Subcontractor shall give at least 3 days notice to the Contractor prior to seeding to allow the Owner to inspect the prepared areas. The Subcontractor shall rework any areas not approved for seeding to the Owner's satisfaction.
- 2.    The Subcontractor shall keep the Contractor advised of schedule of operations.
- 3.    Seed shall be clean, delivered in original unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure with minimum germination rate of 85 percent.

#### **B.    Schedules:**

- 1.    Seeding shall be performed in accordance with the following schedule:
  - a.    Summer Seeding: Between March 15 and June 15, or September 1 to November 15.
  - b.    Winter Seeding: All other times of year, except when weather conditions prohibit further construction operations as determined by the Contractor.

#### **C.    Soil Stabilization and Temporary Seeding:**

- 1.    Soil stabilization seeding shall consist of the application of the following materials in quantities as further described herein for stockpiles and disturbed areas left inactive for more than 14 days.
  - a.    Lime.
  - b.    Fertilizer.
  - c.    Seed.
  - d.    Mulch.
  - e.    Maintenance.

2. Hydroseeding will be permitted as an alternative method of applying seed and associated soil conditioning agents described above. Should the Subcontractor elect to apply soil stabilization seeding by hydroseeding methods, he shall submit his operational plan and methods to the Contractor.
3. Temporary Seeding is to be placed and maintained over all disturbed areas prior to Permanent Seeding. Maintain Temporary Seeding until such time as areas are approved for Permanent Seeding. As a minimum, maintenance shall include the following:
  - a. Fix-up and reseedling of bare areas or redisturbed areas.
  - b. Mowing for stands of grass or weeds exceeding 6 inches in height.

D. Topsoil and Permanent Seeding:

1. Topsoil and Permanent Seeding shall consist of the application of the following materials in quantities as further described herein:
  - a. 6-inch depth of topsoil.
  - b. Lime.
  - c. Fertilizer.
  - d. Permanent seed mix.
  - e. Mulch.
2. Topsoil is to be placed over all disturbed areas that are not surfaced with concrete, asphalt, or pavers.
3. Preparation:
  - a. After rough grading is completed and reviewed by the Contractor, Subcontractor shall spread topsoil as hereinbefore specified over all areas to receive Permanent Seeding to a minimum compacted depth of 6 inches with surface elevations as shown. Loosen the finished surface to a depth of 2-inches and leave in smooth condition, free from depressions or humps, ready for seeding.
  - b. Finish Grading:
    - 1) Subcontractor shall rake the topsoil area to a uniform grade, so that all areas drain as indicated on the grading plan.
    - 2) Subcontractor shall remove all trash and stones exceeding 1-inch in diameter from area to a depth of 2-inches.
4. Permanent Seed:
  - a. After soil has been scarified, apply seed and other products at the rate and proportion specified below:
    - 1) Seed Mix: 150 pounds per acre.
    - 2) 10-10-10 Fertilizer: 1,000 pounds per acre.
    - 3) Lime: 3 tons per acre.
    - 4) Water: As necessary.

5. Maintenance:
    - a. Maintenance Period: Subcontractor shall begin maintenance immediately after each portion of permanent grass is planted and continue for 8 weeks after all planting is completed.
    - b. Maintenance Operations: Subcontractor shall water to keep surface soil moist. Repair washed out areas by filling with topsoil, liming, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Mow to 2 inches after grass reaches 3 inches in height, and mow frequently enough to keep grass from exceeding 3-1/2 inches. Weed by local spot application of selective herbicide only after first planting season when grass is established.
  6. Guarantee:
    - a. If, at the end of the 8-week maintenance period, a satisfactory stand of grass has not been produced, the Subcontractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after October 15 during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season meeting all of the requirements specified under paragraph Permanent Seed.
    - b. A satisfactory stand is defined as grass or section of grass that has a substantial establishment of new grass, strongly rooted, and uniformly green in appearance from a distance of 50 feet. No noticeable thin or bare areas as determined by the Contractor.
- E. Erosion Control Mat: Erosion mats shall be installed in accordance with the manufacturer's requirements.
- F. Rock Ditch Checks: Rock ditch checks shall be installed in accordance with the requirements set forth in the Drawings.

**END OF SECTION**

**SECTION 01 77 00  
CLOSEOUT PROCEDURES**

**PART 1 GENERAL**

**1.01 SUBMITTALS**

**A. Informational Submittals:**

1. Submit prior to application for final payment.
  - a. Record Documents.
  - b. Special bonds, Special Guarantees, and Service Agreements
  - c. Consent of Surety to Final Payment.
  - d. Releases or Waivers of Liens and Claims.
  - e. Releases from Agreements.
2. All disposal documentation for the following (if not submitted previously):
  - a. Universal waste.
  - b. Recycled material.
  - c. Landfilled material.
  - d. Liquids disposed of offsite.
  - e. Tonnages of all steel.
  - f. Final Application for Payment.
  - g. Extra Materials: As required by individual Specification sections.

**1.02 RECORD DOCUMENTS**

**A. Quality Assurance:**

1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
  - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
  - b. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.

4. Prior to submitting each request for progress payment, request Contractor's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Contractor to recommend whole or any part of Subcontractor's Application for Payment, either partial or final.

#### 1.03 RELEASES FROM AGREEMENTS

- A. Furnish Contractor written releases from property owners or public agencies where side agreements or special easements have been made, or where Subcontractor's operations have not been kept within the Owner's construction right-of-way.
- B. In the event Subcontractor is unable to secure written releases:
  1. Inform Contractor of the reasons.
  2. Owner or its representatives will examine the Site, and Contractor will direct Subcontractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
  3. Should Subcontractor refuse to perform this Work, Contractor reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Subcontractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
  4. When Contractor is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if: (i) Subcontractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate Claims that Subcontractor has failed to fulfill terms of side agreement or special easement, or (ii) Subcontractor is unable to contact or has had undue hardship in contacting grantor.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION**

##### 3.01 MAINTENANCE OF RECORD DOCUMENTS

- A. General:
  1. Promptly following commencement of Contract Times, secure from Contractor at no cost to Subcontractor, one complete set of Contract Documents. Drawings will be full size.
  2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.

3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.

B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by Contractor.

C. Making Entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
  - a. Color Coding:
    - 1) Green when showing information deleted from Drawings.
    - 2) Red when showing information added to Drawings.
    - 3) Blue and circled in blue to show notes.
2. Date entries.
3. Call attention to entry by "cloud" drawn around area or areas affected.
4. Legibly mark to record actual changes made during construction.

3.02 FINAL CLEANING

- A. At completion of the Work or of a part thereof and immediately prior to Subcontractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Subcontractor's notice of completion, clean entire Site or parts thereof, as applicable.
  1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner and Contractor.
  2. Sweep sidewalks, loading areas, and others contiguous with principal structures.
  3. Leave water courses, gutters, and ditches open and clean.

3.03 CLOSEOUT PUNCHLIST

- A. Prior to submittal of Final Application for Payment, the Subcontractor shall do a sitewalk with the Contractor's onsite representative. The purpose of this sitewalk will be for the Contractor to develop a punchlist of items that the Subcontractor shall perform prior to the Work as described in these Subcontract Documents being considered complete. The Subcontractor shall complete all punchlist items before submitting its Final Application for Payment.

**END OF SECTION**

**SECTION 02 08 00  
ASBESTOS REMOVAL**

**PART 1 GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. This Section specifies the requirements for the removal of asbestos-containing materials (ACMs) at the Eagle Zinc facility (the Site). Additional information/requirements are included in the *Technical Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*, dated January 2011.
- B. The Work includes the removal of all ACMs indicated in the tables below and any additional ACMs discovered during the project. Special considerations are included in Section 1.09.
- C. The intent of the Work is to completely remove all ACMs from the Site to accommodate building demolition. It is the Subcontractor's responsibility to determine the most efficient method to legally perform this Work. This specification does not dictate specific methods to be employed in the performance of the Work. The entire application of all ACMs shall be removed inclusive of any substrate contamination, whether present on the substrate surface or embedded in the matrix of the substrate component. After abatement is complete the building or equipment component must be rendered completely free of asbestos and rendered recyclable, reusable, and/or disposable in accordance with all applicable regulations.
- D. All asbestos removal work is to be performed in accordance with these Specifications, regulations specified in Section 1.04, the Technical Plan and other state and local regulations governing the Work. Wherever there is a conflict or overlap of the regulations the most stringent provisions apply.
- E. The quantities listed herein represent estimates only and are not guaranteed. The Bidders shall not use quantities listed herein as the sole basis for preparing bids. Materials identified herein as ACM shall be reviewed completely and thoroughly by bidders during the pre-bid site visit and other viewing times made available by the Owner. It is the responsibility of the Bidders to review and confirm all quantities and field conditions, including: locations, surface area, thickness, cross-sectional area, component layers, or substrate conditions. Neither the Owner nor the Contractor will be responsible for errors or omissions and/or charges for extra work arising from any Bidder's failure to become familiar with the existing conditions of the Site. No claims for extra payment due to incorrect quantities will be considered. By

submitting a bid, a Bidder agrees and warrants that he is familiar with the existing site conditions, requirements of the work and the results to be produced. By submitting a bid, the Bidder further agrees that the descriptions contained herein (i.e., quantities, descriptions, locations, areas, thicknesses, etc.) are adequate and that the bidder will produce the required results.

- F. The Asbestos Abatement Subcontractor or sub-subcontractor acceptable to the Owner/Contractor must have a current Asbestos Removal Contractor's license and meet other qualification requirements specified herein, in the bid documents and in the regulations.
- G. The following ACMs are included in the scope of work based on the *Hazardous Materials Survey Report, dated October 2010, prepared by Environmental Design International, Inc.:*

Summary of Findings  
Technical Plan for the Demolition of Buildings at the Former Eagle Zinc Facility

HAS/Sample No.	Material Description	Location	% Asbestos	Estimated Quantity
				Windows 10'x5'
A-B-HA5-15	Window asphalt paper	Window coverings on Building B	8 7	12 windows per side, estimate 50 windows 2,500 square feet
A-B-HA6-18	Black mastic on metal roof	Roof of tin building at east end of Building B	1 2	Tin Building estimated as 100' x 10' 1,000 square feet
A-C-HA7-20	Window glazing	Building C	2 8	Estimate 12 windows per side
A-C-HA8-22	Window caulk	Building C	4 2	NA
A-C-HA16-47	Pipe sealant	North wall center, Building C	2 6	3 linear feet
A-D2-HA17-48	Roof sealant	Building D2	25	All roofs D2-D5
A-D1-HA22-65 & 67	Roof tar	Building D1	1 5 & 2 2	Roof on Building D1
A-D1-HA25-76	Window glazing	Exterior windows on Building D1	3 6	Exterior window glazing on Building D1
A-D1-HA27-82	Roof	Roof at south end of Building D1 at walkway between production building and south end.	2 1	NA
A-H2-HA37-114	Pipe insulation – air cell	Building H2	85	10 linear feet
A-K-HA32-98	Roofing	Building K	1 2	NA

Summary of Findings  
Technical Plan for the Demolition of Buildings at the Former Eagle Zinc Facility

HAS/Sample No.	Material Description	Location	% Asbestos	Estimated Quantity
A-L1-HA40-124	Window caulk	Building L1	5.3	200 linear feet
A-L1-HA40-124	Window glazing	Building L1	1.4	NA
A-L1-HA44-136	Door caulk	Building L1	1.3	60 linear feet
A-L1-HA45-139	Lab tops	Building L1 interior	20	Lab tops: 10'x3' with 10 in the building. 300 square feet
A-L1-HA48-152	Roof	Building L1	4.4	NA
A-M-HA66-210 & 214 & 217	Roof flashing, multiple layers, and caulking	Building M	1.1-1.3	NA
A-M-HA69-219	Thermal system insulation – air cell	Building M – garage engineer office west	55	20 linear feet
A-M-HA70-222	Transite	Building M – break room	25	7500 square feet (ceiling)
A-M-HA77-244	Door caulk interior	Building M – garage door north	1.7	NA
A-N-HA49-158, 161, 164, & 170	Floor tile and mastic (12"x12")	Building N – office tan, brown, and grey	2.1-10	1200 square feet
A-N-HA55-176	Transite ceiling panel	Building N – office	20	150 square feet
A-N-HA56-179	Window glazing	Building N – exterior	1.2	NA
A-O-HA59-188	Roof caulk	Building O	15	NA
A-O-HA63-201	Window caulk	Building O – exterior	1.4	NA
A-P1-HA81-257	Window caulk	Building P1	1.5	NA
A-P1-HA82-260	Door caulk	Building P1	3.1	NA
A-P1-HA85-269	Roof	Building P1	5.3	NA

Note: NA – Not Available based on the poor condition of the roofs and windows and the extent of the material that could be spread around the buildings.

- H. Roof materials at the following buildings contain ACM: Building B, Building D (D1-D5), Building K, Building L1, Building M, Building O, and Building P. Roof samples from Building N did not have asbestos detections.
- I. Some sampling could not be performed due to a building or portions of a building being structurally unsound or other safety concerns. These safety issues will be addressed and subsequent asbestos sampling will then be performed to determine if additional ACM is present and requiring abatement

before completing demolition. Samples will be analyzed on a rush turnaround to minimize schedule impacts. These are as follows:

1. Building E was not sampled, due to the collapsed nature of the building. Based on the roof sample results across the site, the roof materials should be assumed ACM Category I non-friable for the purpose of demolition planning. Once the collapsed roof materials are removed, building materials and any equipment within the remaining building will be surveyed and sampled.
2. Building K interior was not sampled due to the collapsed roof in this area. Based on the roof sample results from Building K roof materials, the roof materials should be managed as ACM Category I non-friable for the purpose of demolition planning. Once the collapsed roof materials are removed, the building interior will be surveyed and sampled.
3. The southeast corner of Building M was not sampled due to the collapsed roof in this area. Based on the roof sample results from the other portion of the Building M roof materials, the roof materials should be managed as ACM Category I non-friable for the purpose of demolition planning. Once the collapsed roof materials are removed, building materials and any equipment within the remaining southeast corner of the building will be surveyed and sampled.
4. Building F contained several feet of water on the floor and the interior was not surveyed or sampled. The water will be sampled prior to removal to determine handling requirements. After removal of the water, the building interior will be surveyed and sampled.
5. Building N contained broken lab equipment including mercury spill kits. A Lumex was used to screen the interior of the building for evidence of mercury vapors. The north area of the office building was deemed unsafe for sampling by the sampling crew. Additional sampling will be performed to determine if decontamination is required to complete the survey and sampling in this area. If mercury decontamination is required, the building interior will be decontaminated prior to surveying and sampling.

## 1.02 RELATED WORK

- A. The following related work items, although not included in this Section, must be coordinated with and performed under the following designated Section:  
02 41 00, Demolition.

### 1.03 SUBMITTALS

- A. Regardless of the content of project specifications, Subcontractor shall prepare and submit a work plan for the asbestos abatement to be approved by Contractor. No asbestos removal activities shall commence until these items are reviewed and approved. Submittal data shall be in sufficient detail for the Contractor to identify the particular product, equipment, method or procedure and form an opinion as to its conformity to the specifications and governing regulations. Each submittal item shall be identified with a cover page or transmittal sheet containing the listed submittal number presented in the same numerical order as outlined below.
1. Name and experience of proposed Supervisors and Foremen (Submittal #1).
  2. Summary of workforce by disciplines, and a notarized statement documenting that all proposed workers have received all required medicals and have been properly trained in asbestos removal work, respirator use, and appropriate State of Illinois, EPA & OSHA standards (Submittal #2).
  3. Notarized Certification: Submit certification signed by an officer of the asbestos abatement contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are in conformance with OSHA requirements, 29 CFR 1926 (Submittal #3).
  4. Plan of Action/Work Plan: Submit a **detailed site specific** plan describing the procedures and engineering controls proposed for use in complying with the requirements of this project. As required by Contractor, include drawings or sketches detailing critical isolation barriers and enclosures, the location and layout of decontamination areas; HEPA exhaust unit locations; location of lighting and power outlets; location of water supply and other equipment. Include calculations for determining negative air requirements. Include methods of demolition for boilers, walls, floors, roof, etc. required to perform the specified abatement work:
    - a. In addition the plan shall include: the sequencing of asbestos work; detailed schedules by dates, shift times, and work activities during that shift; methods to be used to assure the safety of employees and visitors to the Site and a detailed description of the methods to be employed to control airborne fiber concentrations and a lead exposure control plan. All work methods employed to execute the Work must be completely described in sufficient detail for the Contractor to form an opinion whether the Plan complies with these specifications and applicable regulations. (Submittal #4).

5. Contingency Plan: Submit a site specific contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modifications or abridgment of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination and work area isolation. Note that nothing should impede safe exiting or providing of adequate medical attention in the event of an emergency (Submittal #5).
  6. Copies of all applicable notifications, permits, and licenses (Submittal #6).
  7. Name, location, and applicable licenses for primary and secondary landfill for disposal of ACMs or asbestos-contaminated waste. Name and applicable federal and state permits for transporter of asbestos waste materials. (Submittal #7).
  8. Training and Medical Surveillance Records: Subcontractor shall submit the following items prior to starting any asbestos abatement work at the Site (Submittal #8):
    - a. Submit a copy of the training certificate and Illinois license for each worker.
    - b. Report from Medical Examination: Submit a copy of physician's written opinion as defined by 29 CFR 1926.1101(m)(4) for medical examination conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area.
- B. All submittals shall be delivered to the Contractor no less than five working days prior to the start of work. Deliver two complete sets of submittals. Include transmittal with date.
- C. Submit the following items to the Contractor for approval during the course of work under this Contract. These items shall be submitted without delay:
1. Daily logs of workers who enter removal work areas at the Site - Submit Daily.
  2. Results of personal exposure air monitoring samples - Submit Weekly.
  3. Recordings from work area pressure differential monitor - Submit Weekly.
  4. Approved, completed Asbestos Waste Shipment Records (AWSRs) must be submitted within 7 calendar days of shipment of each asbestos waste load from the Site.

#### 1.04 APPLICABLE STANDARDS

- A. Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable codes, regulations, and standards have full force and effect. All work shall conform to the standards set by applicable federal, state, and local laws, regulations and ordinances in such form in which they exist at the time of the work under the Contract.
- B. Federal Requirements that govern asbestos abatement work or transportation and disposal of asbestos waste materials include the following:
  - 1. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including Title 29, Parts 1910 and 1926, as applicable.
  - 2. U.S. Environmental Protection Agency (EPA) including but not limited to Title 40, Part 61 (National Emission Standards for Hazardous Air Pollutants), as applicable.
  - 3. U.S. Department of Transportation, Title 49, Parts 172 and 173.
- C. State Requirements: Which govern asbestos abatement work or hauling and disposal of asbestos waste materials include the following:
  - 1. Illinois Code of State Regulations 225 ILCS 207.
  - 2. Illinois Code of State Regulations 77 Ill. Admin Code 855.
- D. Local Requirements: Abide by all local requirements, which govern asbestos abatement work and hauling and disposal of asbestos waste materials.

#### 1.05 NOTIFICATIONS, PERMITS, AND LICENSES

- A. State and Local Agencies: Send written notification as required by state and local regulations prior to beginning any work on asbestos-containing materials.
  - 1. IL Environmental Protection Agency  
P.O. Box 19276, Mail Code #41  
Springfield, IL 62794-9276  
Telephone: (217) 785-2011  
Fax: (217) 782-1875
  - 2. IL Department of Public Health  
525W Jefferson Street  
Springfield, IL 62761  
Telephone: (217) 782-4977  
Fax (217) 785-5897

- B. Licenses: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this Contract.

#### 1.06 AVAILABILITY OF TRAINED PERSONNEL

- A. Subcontractor shall ensure that there are a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work within the required schedule. Since asbestos and hazardous building materials abatement is integral with the overall project scope of work, it is imperative that a sufficient number of trained personnel be engaged throughout the abatement process. No untrained, unlicensed, or unqualified person shall be employed to expedite completion of the abatement work.

#### 1.07 RESPIRATORY PROTECTION

- A. Subcontractor shall provide all workers, foremen, superintendents, authorized visitors, and inspectors proper, approved respirators and other personal protective equipment. When respirators with disposable filters are employed, the Subcontractor shall provide sufficient filters for replacement as necessary by the worker or authorized visitor. Filters shall be disposed of as contaminated waste.
- B. Subcontractor shall ensure that respiratory protection is provided to workers in accordance with applicable regulations. Type "C" protection is required unless an Initial Exposure Assessment has been conducted that allows a lower level of respiratory protection to be utilized.
- C. Initial Exposure Assessment:
  - 1. Subcontractor shall ensure that a "competent person" conducts an exposure assessment immediately before, or at the initiation of work to determine expected exposures during the work in accordance with 29 CFR 1926.1101. For Class I and Class II asbestos work, until the Subcontractor conducts exposure assessment monitoring and documents that workers on the job will not be exposed in excess of the Permissible Exposure Limit (PEL) or otherwise makes a negative exposure assessment, the Subcontractor shall assume that workers are exposed in excess of the PEL or excursion limit.
  - 2. Subcontractor may demonstrate that worker exposures will be below the PEL (Negative Exposure Assessment) by data, which conforms to the requirements of 29 CFR 1926.1101.

- D. Respiratory protection shall be worn at all times, including all asbestos removal activities, loading and unloading of waste containers, cleaning of work area, and performance of glove bag removal work.

#### 1.08 TEMPORARY FACILITIES

- A. Subcontractor shall provide temporary utilities and facilities as required herein or as necessary to carry out the Work. All costs associated with established temporary utilities and facilities shall be the responsibility of the Subcontractor and shall be included within his/her bid submittal. Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work. Relocate, modify and extend services, utilities and facilities as required to accommodate all the work of the project.

#### 1.09 SPECIAL CONSIDERATIONS

- A. Subcontractor is advised that certain paints in the building have been tested for the presence of lead. Painted surfaces with significant measurable lead in the building are as follows:
  - 1. Building A: The painted surfaces in Building A included the metal support beams and the wood door frame, both tested positive for LBP, (grey paint).
  - 2. Building B: The painted surfaces in Building B included wood, wall joists, concrete walls, wood door frames, and corrugated metal. Each of the substrates tested had a positive reading for lead, (red and grey paints).
  - 3. Building C: The painted surfaces in Building C included cinder block and particle board walls, wood frame and ceiling, metal walls, door frames, kilns, and production elements. In Building C, the only paint testing positive for lead was the grey paint on the cinder block walls (near the building entrance). Some painted metal and wood surfaces did not test positive for LBP.
  - 4. Building D Group: The painted surfaces in Building D included wood and concrete doors; production elements; concrete walls; metal board walks, stairs and support beams; and wood window frames. Numerous painted surfaces tested positive for lead including grey painted wood window and door frames. The grey metal hopper and grey painted walk both tested positive for lead. The white metal stairs tested positive for lead. The south room had white LBP on wood ceiling, wall, and joists. In general, the grey paint tested positive for lead. The blue, yellow, red, and green paints on production elements and other surfaces tested

negative for lead. The wood door frames on each of the buildings D2-D5 tested positive for lead. On building D5, the grey paint with yellow under on the window frame and wall tested positive for lead. The red metal wall also tested positive for lead.

5. Building F: Building F had grey paint on metal and wood that tested negative for lead. The red paint on the metal hopper tested positive for lead.
6. Building G: Building G tested negative for LBP on metal walls and support beams.
7. Building H Group: Building H (three different small buildings) had a positive reading for a white brick wall. Building H2 had a metal door and window frame, brick wall and wood door; all test positive for lead on white paint. Building H3 had a white exterior window frame test positive for lead.
8. Building I Group: Building I1 had no positive lead readings. Building I2 had grey paint on metal support beams and wood door frames that tested positive for lead. Building I3 had grey and white paint that tested positive for lead on wood door frames and beams, and the metal conveyor system.
9. Building J: Building J had grey and white paints on metal support beams that tested positive for lead.
10. Building L Group: Building L1 had yellow, green and white paints with positive readings for lead on plaster, ceilings, doors, and door frames. Building L2 had white paint with positive LBP readings on concrete window sills and wood ceiling joists. The red painted brick and the wood door frame tested negative for LBP.
11. Building M: Building M had white and grey painted wood tested positive for LBP. The white wood painted cabinets and ceiling joists tested negative for lead. The concrete pillars white and blue tested positive for lead. The yellow wall tested negative, the grey floor (concrete) had a positive reading. The red brick tested negative, but the white cinder block tested positive for LBP.
12. Building N: Building N had blue painted concrete window sills that tested positive for lead. The red, black, and white paints in Building N tested negative for lead.
13. Building O: Building O had white on brick walls and wood ceiling joints that tested positive for lead. Building O had doors, support beams, and red brick walls that tested negative for LBP.
14. Building P Group: Building P1 had white and grey paints on door frames and walls that tested positive for LBP. Brick and metal walls tested negative for lead.

15. The building components reported as positive for LBP, substrates, color, locations, and readings are listed in the Lead Sample Log sheets, along with all the components tested in Appendix D. A summary of these results identified some common characteristics:
  - a. Grey paint across the buildings (A, B, C, D, I, J, M, and P) had positive lead content.
  - b. White paint across the building tested more than 50 percent positive for lead (suspect paint that should be checked).
  - c. Peeling white paint in Building D1 production area is presumed to be LBP based on positive lead readings for the paint in the production room.
  - d. Red paint in buildings B, D1, and F1 tested positive for lead. Other paint colors had mixed positive and negative lead results.
  - e. Concrete and cinder block (Building C) had positive lead readings.
  - f. Not all painted surfaces tested positive for lead.
- B. A paint chip sample for every 10 HSAs was collected as a measure of quality control. The paint chip samples were analyzed by USEPA Central Regional Laboratory for lead by ICP. The paint chip results ranged from 14 mg/kg to 160,000 mg/kg. The paint chip results are reported with the XRF data sheets and generally confirm the XRF lead results in the EDI report appended to the Decontamination and Demolition Technical Plan.
- C. All costs associated with the requirements set forth by OSHA regulations 29 CFR 1926.62, *Lead Exposure in Construction: Interim Final Rule* and 29 CFR 1926.59, *Hazard Communication for the Construction Industry* shall be borne by the Contractor.
- D. The Site is located in a residential area. As such, all asbestos abatement and related work must be performed at a time and in a manner to prevent disruption to local residents, institutions and businesses. Subcontractor shall ensure that the work is performed in an appropriate manner and that employees and subcontractors behave in an appropriate manner at all times during the project. Hours of operation shall be limited to 7:00 AM to 5:00 PM, Monday through Saturday – unless otherwise approved by the Contractor in advance in writing.
- E. If the project will be performed during the winter months, Subcontractor shall be responsible for snow removal as necessary for the removal of asbestos-containing materials.

- F. Demolition of block, concrete, plaster, gypsum board walls and ceilings, and other building materials, equipment and components to properly access and remove ACMs is part of the project scope. Selective demolition shall be performed in a controlled manner as to not impact ACMs or PACMs in ceilings, walls cavities and/or pipe chases. Debris generated during the selective exploratory demolition work shall be promptly separated and removed prior to performing any asbestos abatement/removal. Selective demolition and exploratory demolition shall be required and the cost shall be included in the lump sum bid amount. Any additional concealed ACMs discovered as a result of this limited exploratory demolition shall performed at the contractual unit prices or as otherwise agreed upon with the Contractor. However, if the total quantity of an ACM does not exceed the total quantity specified in this specification, no additional compensation will be made.
- G. Subcontractor shall ensure that any and all fire detection and suppression equipment and systems are secured from inadvertent impact or activation. Include the cost for installing and maintaining temporary systems if necessary to satisfy the Hillsboro Fire Department requirements. Provide written documentation that this requirement has been satisfied. Coordinate with the Contractor to satisfy governing regulations.

## **PART 2 PRODUCTS**

### **2.01 GENERAL REQUIREMENTS**

- A. Subcontractor shall deliver all materials and equipment to the Site in the original containers bearing the name of the manufacturer, and details for proper storage and usage.
- B. All materials or equipment delivered to the Site shall be unloaded, temporarily stored, and transferred to the work area in a manner which shall not interfere with building operations.
- C. Unloading and temporary storage sites, and transfer routes, must be reviewed in advance by the Contractor.
- D. Damaged or deteriorated materials may not be used and must be promptly removed from the premises. Material which becomes contaminated with asbestos-containing material shall be packaged and legally disposed of in an approved, secure landfill.

- E. All materials, tools, and equipment must comply, at a minimum, with this Specification, and relevant federal, state, and local codes.
1. Negative Air Machines/HEPA Exhaust Units: All HEPA units that will be discharged to the interior of any building area MUST be individually tested on-site and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um dioctylphthalate (DOP) particles. Testing shall be in accordance with Military Standard Number 282 and Army Instructions Manual 136-300-175A. Each filter shall bear a UL586 label to indicate ability to perform under specified conditions. All Units shall have visible and audible alarms as required by governing regulations.
  2. Pressure Differential Recorders: Provide air pressure sensing and measuring devices equipped with recorders for continuous monitoring of Work Area pressure differential. Provide and maintain sufficient quantities of chart paper and recording devices until completion of Work.
  3. Vacuum Cleaning Equipment: shall be industrial type designed for such use, equipped with High Efficiency Particulate Air (HEPA) filters. The equipment shall not be used to remove water and shall be properly operated at all times and shall be emptied and thoroughly cleaned inside the work area at the conclusion of the cleaning stage of the project.

### **PART 3 METHODS**

#### **3.01 ELECTRICAL ISOLATION, AND TEMPORARY POWER AND LIGHTING**

- A. The electrical isolation work includes the shutdown of all electrical and lighting circuits in the work area and installation of temporary lighting and power with ground fault protection circuitry in accordance with applicable codes.
1. Temporary lighting shall be provided by the Subcontractor in all work areas where asbestos removal is performed.
  2. Temporary lighting and power systems shall comply with all OSHA, state, and local regulations.
  3. Subcontractor is responsible for providing a safe condition, verifying existing electrical conditions and determining isolation requirements.
  4. Subcontractor costs associated with the isolation of electrical systems and installations of temporary power and lighting must be included in the Bidder's/Subcontractor's prices.
  5. Subcontractor shall provide AC power for the Contractor to collect and analyze air samples.

### 3.02 WORK AREA ISOLATION AND DECONTAMINATION FACILITIES

#### A. Decontamination Facilities:

1. Subcontractor shall establish a Decontamination Facility that is adjacent and connected to each work area for the decontamination of workers. The decontamination area shall consist of an equipment room, shower area and clean room in series. Subcontractor shall ensure that workers enter and exit the regulated area through the Decontamination Facility. Subcontractor shall provide the following:
  - a. Equipment Room (Dirty Room): Provide Equipment Room with airlocks to the work area and Shower Room, large enough for all workers to remove and dispose of contaminated protective clothing, and for storage of contaminated Subcontractor equipment.
  - b. Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the work area from the changing room, or for showering by workers headed out of the work area after undressing in the Equipment Room. The Shower Room shall be adequate to allow decontamination and thorough washing of all the workers and visitors within the 30 minute escape time allowed under air compressor failure (if Type C Supplied Air Respirators are used). Provide 20 micron and 5 micron waste water filters in line to drain. Change filters daily or more often if necessary. Locate filters inside shower unit so that water leakage during filter changes is contained by the shower pan.
  - c. Clean Room (Changing Room): Provide a room that is physically and visually separated from the rest of the work area for the purpose of changing into protective clothing. Locate so that access to the work area from the Clean Room is through the Shower Room. Do not allow asbestos contaminated items to enter this room.
2. Maintain floor of the Clean Room dry and clean at all times. Do not allow overflow water from shower to enter changing room.
3. Maintain emergency and fire exits from the work area, or establish alternative exits satisfactory to local fire officials and the Owner's Consultant. Exits shall be checked daily for exterior blockages or impediments to exiting.

4. Access Restrictions: Subcontractor shall limit access to abatement work area to persons who have previously been identified by the Contractor or persons having legal jurisdiction over the work. Subcontractor's Supervisor shall at all times monitor the entrance to the DF to prevent unauthorized access and maintain a written log of all people entering the work area.

### 3.03 APPROVAL OF WORK AREA PREPARATION

- A. After each asbestos removal work area has been prepared, the Subcontractor shall request a formal site inspection by the Contractor. No removal, demolition, or other disturbance of ACMs, dust, or debris shall occur until the Contractor has inspected and accepted the site preparation work.

### 3.04 ASBESTOS REMOVAL UNDER FULL CONTAINMENT

- A. This Section covers the removal of ACMs where conducted inside of a removal area (negative pressure enclosure) which has been isolated and protected with polyethylene coverings, has a HEPA-exhaust system and has a 3-room Decontamination Facility.
- B. Amended water mixed and carefully applied using an airless sprayer as specified by the manufacturer, shall continuously be used to control the release of asbestos fibers from the ACM prior to and during removal. The amended water shall be applied in sufficient quantity to fully penetrate and saturate friable materials before removal begins. Additionally, continuous misting of the air throughout the Work Area with amended water shall be performed during removal of friable and non-friable ACMs.
- C. Removal Methods:
  1. Friable and Non-Friable Asbestos-Containing Materials:
    - a. No asbestos removal work shall begin until the Work Area has been prepared to the satisfaction of the Contractor as summarized in preceding Sections.
    - b. After the ACMs have been fully wetted, they shall be carefully removed using suitable tools and equipment per the Subcontractor's Plan of Action.
    - c. As the ACM is removed, it shall be promptly wetted and packed into impermeable, labeled 6-mil polyethylene disposal bags and/or approved disposable drums. When each bag is full, the packaged material shall be sprayed with amended water, sealed, and transported to a temporary storage area inside of the Work Area. Accumulations of standing or free water shall not be allowed to collect on the Work Area floor.

- d. If the asbestos material is located on surfaces higher than 15 feet above the floor, the Subcontractor shall provide closed chutes (with maximum incline of 60 degrees), or scaffolding for waste containers to prevent dropping material to the floor/ground during removal.
- e. Subcontractor shall repeatedly mist the Work Area and spray all asbestos-containing material to prevent it from drying out. The Subcontractor shall repeatedly and continuously mist the Work Area during all asbestos removal operations to reduce airborne dust and fiber levels.
- f. Subcontractor shall use approved tools and methods to remove all remaining visible and microscopically detectable material.
- g. Subcontractor shall minimize contamination of the work floor, the exterior of disposal containers, and all other surfaces within the Work Area. At the end of each shift, all surfaces shall be cleaned of all materials and then HEPA-vacuumed or wet wiped and all debris packaged in 6-mil polyethylene bags.
- h. Excessive water accumulation or flooding in the Work Area shall require Work to stop until the water is collected and disposed of properly.
- i. Should the Subcontractor remove any non-friable ACMs in a manner which transforms the material into a friable material, the Subcontractor shall be responsible for handling and disposing of this material as friable asbestos waste at no additional cost to the Contractor. Additionally, all requirements for containments, engineering controls and work practices specified for the removal of friable ACMs shall apply. As such, the removal of asbestos-containing floor tile and asbestos-containing mastic using mechanical means shall require containments, engineering controls and work practices specified in CMR 453 Section 6.00.

### 3.05 ASBESTOS REMOVAL USING GLOVE BAGS

- A. This Section pertains to the removal of asbestos pipe and pipe fitting insulation using the ventilated glove bag technique performed inside a negative pressure enclosure.
- B. Subcontractor shall provide and utilize all equipment necessary to perform the work.
- C. Maximum temperature of components (pipe, ducts, stacks etc.) allowable for glove bag work shall be as specified by glove bag manufacturer.

- D. All glove bag removal work shall be planned in advance and scheduled with the Contractor who will observe and monitor all glove bag removal activities.
- E. Removal Procedure:
1. Isolate Work Area, exclude unauthorized personnel from the immediate area, seal critical barriers, and install warning signs.
  2. Asbestos laborers involved in the negative pressure enclosure procedure shall wear two (2) disposable suits, including gloves, hood and footwear, and respiratory protection in accordance with regulatory guidance. All street clothes shall be removed and stored in a Clean Room. The double layer disposable suit shall be worn during the installation of the negative pressure enclosure and throughout the procedure if a decontamination unit with a shower is not contiguous to the Work Area. If a decontamination unit (with Shower and Clean Room) is contiguous to the Work Area, only one layer of disposable personal protective equipment shall be required.
  3. No disturbance of ACM shall occur during installation of the glove bag. Negative pressure enclosure requirements shall be accomplished in a constructed or commercially available plastic "tent-enclosure". This is a single use device that shall not be reused once dismantled or collapsed. The negative pressure enclosure shall be constructed of 6-mil plastic sheeting supported as necessary or secured to existing walls, with seams double-folded, stapled and taped airtight and then taped flush with the adjacent negative pressure enclosure wall.
  4. HEPA-exhaust units shall be installed in each Work Area. A centrally located remote Decontamination Facility shall be installed. The location of the Remote Decontamination Facility shall be reviewed by the Contractor.
  5. Subcontractor is responsible for demonstrating to the Contractor the tightness of the glove bag to the pipe.
  6. During removal, periodically wet the inside surfaces of bag and any waste for better visibility and fiber control. Use cold water to prevent fogging.
  7. During removal, periodically use HEPA-vacuum to compensate for any leaks and to reduce airborne fiber levels.
  8. Cut the insulation sharply for neat sealing of exposed insulation. Leave 4-inch minimum margin at the bag seal point for safety.
  9. After removal of all asbestos, wash down all surfaces to below the levels where the bag will be sealed, and saturate the waste. Ensure the absence of residue in folds, on the back side of pipe, etc.
  10. Glove bags shall be used for only one operation and then be disposed of. Glove bags shall not be reused.

F. Post Removal Procedures:

1. Seal exposed ends of any remaining insulation with fiberglass wettable cloth while the insulation is damp, unless additional removal is planned.
2. If no additional removal is planned, the glove-enclosed tools shall be immersed in a pail of water, opened and cleaned (rags and/or sponges can be used to clean other tools, but cannot be salvaged). The water and other debris shall be disposed of as asbestos waste.
3. The stripped surface shall be encapsulated with an approved encapsulant.
4. Upon completion of abatement, and prior to dismantling the negative pressure enclosure, the enclosed surfaces shall:
  - a. Be wet cleaned using rags, mops or sponges;
  - b. Be permitted sufficient time to dry, followed by HEPA vacuuming of all surfaces;
  - c. Be lightly encapsulated to lockdown residual asbestos.
5. The bagged waste shall be wet cleaned and/or HEPA vacuumed and then transferred outside the negative pressure enclosure, double bagged in the Shower Room, and appropriately handled prior to disposal.

G. After exiting the work area, workers shall clean the outer layer of protective clothing by using the HEPA-vacuum, then carefully remove the outer layer and dispose in 6-mil waste bags. The workers shall then proceed directly to the Decontamination Facility (contiguous or remote) and proceed with required decontamination procedures.

H. All glove bag enclosures will undergo a final visual inspection and final air clearance testing by the Contractor.

3.06 EXTERIOR CAULKING AND SEALANT REMOVAL

- A. This Section covers the removal of asbestos-containing caulking, sealants and flashing cements from the building exterior.
- B. Where required by governing regulations, fall protection shall be addressed by Subcontractor for this activity.
- C. Since some of the asbestos-containing exterior caulking, sealant and flashing is in poor condition, the Subcontractor shall use means, methods, work practices and engineering controls to prevent further damage to the ACMs and to prevent debris from falling from the buildings.

- D. If an existing Decontamination Facility (DF) can be used for washing and cleaning, a remote DF will not be required. A remote DF will be required if no other DF exists at the Site that can be used for worker and equipment decontamination/washing.
- E. Subcontractor shall at a minimum use plastic sheeting "drop cloths" below all removal work, both inside and outside the building.
- F. Worker protection shall include disposable suits and half-face air purifying respirators at a minimum.
- G. Subcontractor shall use HEPA vacuums to pre-clean the immediate area of any loose ACM that is likely to be impacted or released during asbestos removal. HEPA vacuums and/or HEPA exhaust units shall be maintained in the immediate work area for further fiber and dust control.
- H. It is the responsibility of the Subcontractor to use means and methods that comply with all governing regulations.

### 3.07 REMOVAL OF ASBESTOS-CONTAINING ROOFING MATERIALS

- A. Subcontractor shall comply with the EPA NESHAPs and Illinois regulations and policies for the removal and disposal of asbestos-containing roofing materials. All costs associated with complying with this sub-section and any other applicable Federal, State, or local regulations regarding roofing material shall be included in payment items in this Section.
- B. Subcontractor shall submit roof removal plans as part of the site specific Work Plan. Deviations from the approved plan are prohibited unless resubmitted and accepted.
- C. Removal of asbestos-containing roofing materials shall be performed in accordance with 29 CFR 1926.1101(g)(8)(ii).
- D. Subcontractor will proceed with the removal of asbestos-containing roofing materials in a manner that will prevent degradation of the roof structure and ensure no visible emission of asbestos or other dusts into the air. Roofing materials cannot be drilled, sawed, or mechanically abraded in any fashion. Should the Subcontractor remove any non-friable asbestos containing materials in a manner which transforms the material into a friable condition, the Subcontractor shall be responsible for handling and disposing of this material as friable asbestos waste at no additional cost to the Contractor.
- E. Once removed from the substrate roofing materials will be immediately prepared for transportation to a landfill acceptable to the Contractor.

- F. Handling of Roofing Materials: Removed roofing material will be handled in accordance with the following guidelines:
1. Removed roofing materials will be maintained in a wet condition during all handling procedures. If asbestos roof removal is performed during winter months, provide contingencies for ice, freezing, slipping hazard, etc.
  2. All bulk roofing materials will be placed into approved double poly-lined dumpsters or transport vehicles immediately upon removal from the building. Large components of roofing shall be lowered into lined dumpsters via mechanical machines, lifts or cranes. Roofing materials and debris shall not be dropped in dumpsters via chutes.
  3. All residual roofing debris and dust will be immediately placed into 6-mil polyethylene bags labeled for asbestos waste materials. These bags will be placed into a second, clean 6-mil polyethylene asbestos waste bag, sealed, and disposed of as asbestos waste pursuant to Section 3.08.
- G. Transportation and disposal of roofing materials will be in accordance with Section 3.08 with the following provisions:
1. Subcontractor will provide dedicated waste dumpsters of the following types:
    - a. Fully enclosed units for all roofing material that is bagged or wrapped and labeled as asbestos waste.
    - b. Fully enclosed or covered open-top units for large, unwrapped sections of roofing material.
  2. All roofing material that is bagged or wrapped and labeled as asbestos waste will be disposed of at a landfill approved for disposal of friable asbestos waste. Large, unwrapped sections of roofing material may be transported to an approved landfill which accepts non-friable asbestos-containing materials.

### 3.08 ASBESTOS WASTE DISPOSAL

- A. Subcontractor shall package, label, and remove all asbestos waste from the work area and Site as specified herein. Packaging shall be accomplished in a manner that minimizes waste volume, but insures that waste containers do not tear, break or leak. Transportation and disposal of the containerized waste at a landfill previously accepted by the Contractor shall be the responsibility of Subcontractor.

- B. **Waste Removal Scheduling:** All waste containers generated during asbestos removal operations shall be decontaminated and removed from the Work Area before final cleanup is started and isolation barriers are removed. Subcontractor must pre-schedule and obtain the approval of the Contractor for all time periods he desires to remove waste bags from the work area and the Site. Contractor must observe removal of all waste containers to verify their condition and estimated volume of waste material. Subcontractor shall complete an asbestos waste shipment record (AWSR) including description and quantity of all ACM for each load of waste as required by NESHAPs. The AWSR must accompany each asbestos waste load when it leaves the Site.
- C. **Waste Transportation and Disposal Regulations:** It is the responsibility of the Subcontractor to determine and insure that Waste Transporter is complying with: 1) the current waste handling regulations applicable to each work site; and 2) the current regulations for transporting and disposing waste at each ultimate disposal landfill. Subcontractor must comply fully with these regulations; and with all U.S. Department of Transportation, state, local, and EPA requirements. Where required, the Subcontractor's waste hauler and disposal subcontractor shall maintain a valid hazardous waste transporter's permit and identification number; and obtain, complete, and fully comply with any other local waste manifesting requirements.

### 3.09 AIR MONITORING BY CONTRACTOR'S CONSULTANT

- A. This section describes air monitoring performed by the Contractor's Consultant to verify that the work area and the outside environment remain uncontaminated. This Section also sets forth airborne fiber levels both inside and outside the work area as action levels, and describes the action required by the Subcontractor if an action level is met or exceeded. The Contractor's Consultant will be conducting air monitoring during the course of the project in accordance with applicable regulations.
- B. All perimeter sampling and analysis will be performed by the Contractor's Consultant. Written reports of all air monitoring tests will be provided to the Contractor.
- C. Personnel air monitoring required by OSHA is the responsibility of the Subcontractor and is not covered in this Section.
- D. **Work Area Isolation:** The purpose of the air monitoring by the Contractor's Consultant during abatement work will be to detect faults in the Work Area isolation such as:
  - 1. Building contamination outside the Work Area with airborne asbestos fibers;

2. Failure of negative pressure HEPA filtration or compromise, breach or rupture in the negative pressure system;
  3. Contamination of the exterior of the building with airborne asbestos fibers;
  4. Should any of the above occur, the Subcontractor shall immediately cease asbestos abatement activities until the fault is corrected and work shall not recommence until authorized by the Contractor's Consultant.
- E. Work Area Clearance: To determine if the elevated airborne fiber counts measured during abatement operations have been reduced to an acceptable level, the Contractor's Consultant will sample and analyze air per Section 3.10.
- F. Airborne Fiber Counts:
1. Inside Work Area: Maintain an average airborne fiber concentration in the Work Area of less than 0.5 fibers per cubic centimeter. If the airborne fiber concentration rises above this figure for any sample taken, revise work procedures to lower the airborne fiber concentration. If airborne fiber concentrations exceed 1.0 fiber per cubic centimeter for any period of time and if supplied air respiratory protection is not provided, cease all Work until fiber counts fall below 1.0 fiber per cubic centimeter.
  2. Outside Work Area: If any air sample taken outside of the Work Area exceeds 0.010 f/cc, immediately and automatically stop all Work. If this air sample was taken inside the building and outside of the critical barriers around the Work Area, immediately erect new critical barriers as specified herein to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the space (e.g., doorway, wall, ceiling, floor).
    - a. Decontaminate the affected area(s) in accordance with these Specifications.
    - b. Respiratory protection shall be worn in affected area until area is cleared for re-occupancy.
    - c. Leave Critical Barriers in place until completion of Work and insure that the operation of the negative pressure system in the Work Area results in a flow of air from the balance of the building into the affected area.
    - d. If the exit from the Clean Room of the Decontamination Facility enters the affected area, establish a temporary Decontamination Facility consisting of a Shower Room and Changing Room as specified herein. After cleaning and decontamination of the affected area remove the Shower Room and leave the Changing Room in place as an air lock.

- e. After certification of visual inspection in the Work Area remove critical barriers separating the Work Area from the affected area. Final air samples will be taken within the entire area as set forth in Section 3.08.
- G. Fiber Counts: The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts. "Airborne Fibers" referred to above include all fibers regardless of composition as counted in the NIOSH 7400 Procedure. If Work has stopped due to high airborne fiber counts, air samples will be secured in the same area by the Owner's Consultant for analysis by electron microscopy. "Airborne Fibers" counted on samples analyzed by Transmission Electron Microscopy (TEM). The cost for all additional analysis shall be borne by the Contractor.

### 3.10 FINAL INSPECTION AND WORK AREA CLEARANCE

- A. Upon completion of asbestos removal work, but prior to commencing encapsulation of the work area, the Subcontractor shall request the Contractor's Consultant to conduct a final inspection of the work area.
- B. After the Contractor's Consultant completes the visual inspection, Subcontractor shall apply an approved encapsulant to all surfaces inside each containment including plastic sheeting and all removal surfaces. Cleanable surfaces that were not protected with plastic sheeting shall be thoroughly cleaned using means and methods approved by the Contractor's Consultant. Sufficient time, as recommended by the encapsulant manufacturer, shall elapse before the Contractor's Consultant performs final air clearance testing as described below.
- C. Following a successful final visual inspection, final air clearance testing shall take place using aggressive air sampling techniques as specified in 453 CMR 6.00. Final air clearance testing must be successfully completed to establish that airborne fiber levels do not exceed 0.010 f/cc as determined by NIOSH Method 7400 (Phase Contrast Microscopy) or alternatively by transmission electron microscopy (TEM) per 453 CMR 6.00. Subcontractor shall supply and/or operate circulating fans and leaf blowers as required by the Contractor's Consultant during the final air clearance testing to ensure effective air circulation.

- D. Surface wipe and/or bulk samples may also be taken and analyzed at the option of the Contractor's Consultant to confirm that all microscopically detectable asbestos has been removed. If the results of the final testing are not satisfactory, thorough wet cleaning and/or HEPA vacuuming shall be repeated until the required decontamination levels are achieved. Subcontractor shall bear all costs for additional cleaning, inspections, testing and cleaning until the area passes final air clearance testing.
- E. Subcontractor will be notified as quickly as possible upon completion of the results of visual inspections and air clearance testing.
- F. After successful completion of the final air clearance testing, Subcontractor shall carefully remove the decontamination facilities and any temporary barrier walls or tunnels. The HEPA-exhaust systems shall be removed only after all other items are removed and post-abatement clean-up/decontamination is completed. A sufficient number of HEPA-vacuum shall be kept on-site during this final disassembly work to cleanup any dust or debris.

**END OF SECTION**

**SECTION 02 41 00**  
**DEMOLITION**

**PART 1 GENERAL**

**1.01 REFERENCES**

- A. The following is a list of standards which may be referenced in this Section:
1. American National Standards Institute (ANSI): A10.6, Safety Requirements for Demolition Operations.
  2. Occupational Safety and Health Administration (OSHA), U.S. Code of Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and Health Regulations for Construction.
  3. Environmental Protection Agency (EPA), U.S. Code of Federal Regulations (CFR), Title 40:
    - a. Part 61—National Emission Standards for Hazardous Air Pollutants.
    - b. Part 82—Protection of Stratospheric Ozone.
    - c. Part 273—Standards for Universal Waste Management.
    - d. Part 761—Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

**1.02 DEFINITIONS**

- A. ACM: Asbestos-containing material.
- B. Contaminated Materials: Soil or putrescible building materials resulting from Demolition (excluding non-putrescible materials such as concrete, bricks, cinderblocks, etc.) that the Contractor has determined exhibits contamination less than TSCA levels and that will be disposed of offsite at a RCRA Subtitle D landfill.
- C. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or structure or any part thereof.
- D. Equipment: Salvageable equipment of which the Subcontractor takes ownership.
- E. Hazardous Waste: Hazardous waste is as defined in 40 CFR 261.3 and 35 Illinois Administrative Code (IAC) Part 721.
- F. Modify: Provide all necessary material and labor to modify an existing item to the condition indicated or specified.

- G. Non-Contaminated Materials: Building materials (concrete, cinderblocks, or bricks with no salvage value) resulting from Demolition that the Contractor has determined to be below TCLP disposal criteria. Subcontractor shall be responsible for processing (2-foot minus), transporting, placing and compacting Non-Contaminated Materials generated during Demolition in the consolidation cell to be constructed at the southwest corner of the site.
- H. RACM: Regulated asbestos-containing material.
- I. Salvage/Salvageable: Remove the equipment, building materials, or other items to be saved from destruction, damage, or waste; such property to become that of Subcontractor. Unless otherwise specified, title to items identified for Demolition shall revert to Subcontractor.
- J. Salvageable Metal: Steel or other metals resulting from Demolition of which the Subcontractor takes ownership and which can be decontaminated.
- K. Special Waste: Special Waste is as defined in 35 Illinois Administrative Code (IAC) Part 808.
- L. Trash: Miscellaneous glass, wood, plastic, paper, and other debris resulting from Demolition that will be disposed of offsite at a RCRA Subtitle D landfill.
- M. Universal Waste Lamp: In accordance with 40 CFR 273, the bulb or tube portion of an electric lighting device, examples of which include, but are not limited to, fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.
- N. Universal Waste Thermostat: A temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.

#### 1.03 SUBMITTALS

- A. Submit proposed Demolition Plan, in accordance with requirements specified herein, for approval before such Work is started. This plan can be incorporated as part of the Work Plan specified in Section 01 31 13, Project Coordination.
- B. Submit copies of any notifications, authorizations and permits required to perform the Work.

#### 1.04 REGULATORY AND SAFETY REQUIREMENTS

- A. When applicable, Demolition Work shall be accomplished in strict accordance with 29 CFR 1926-Subpart T.
- B. Comply with federal, state, and local hauling and disposal regulations. Subcontractor's safety requirements shall conform to ANSI A10.6.
- C. Furnish timely notification of this Demolition project to applicable federal, state, regional, and local authorities in accordance with 40 CFR 61, Subpart M.
- D. Comply with any other applicable federal, state, and local regulations.
- E. Additional information/requirements are included in the *Technical Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*, dated January 2011.

#### 1.05 DEMOLITION PLAN

- A. Demolition Plan shall provide for safe conduct of the Work and shall include:
  - 1. Detailed description of procedures and equipment to be used for each operation.
  - 2. The Subcontractor's planned sequence of operations, including coordination with other work in progress.
  - 3. Mobilization/site setup.
  - 4. Construction of temporary access roadways and ramps
  - 5. Erosion protection, dust and vapor control.
  - 6. Universal waste removal and disposal.
  - 7. Decontamination of Building Materials.
  - 8. Building demolition.
  - 9. Decontamination of structural steel.
  - 10. Demolition materials staging and disposal.
  - 11. Procedures for removal and disposition of materials to be salvaged
  - 12. Procedures for identification, removal, and disposal of any RACM will be included in the asbestos submittals specified in Section 02 08 00, Asbestos Removal. This work shall be performed by individuals with the appropriate certifications and/or licenses. Procedures must comply with the requirements of 40 CFR 61, Subpart M.
  - 13. Demobilization.

#### 1.06 SEQUENCING AND SCHEDULING

- A. The Work of this Specification shall not commence until Subcontractor's Demolition Plan has been approved by Contractor.

- B. Include the Work of this Specification in the progress schedule, as specified in Section 01 32 00, Construction Progress Documentation.
- C. Some buildings will require partial demolition due to structurally unsound roofs, which prevented hazardous materials surveying and sampling from being performed. These buildings are: Building E, Building K and the southeast corner of Building M. Subcontractor shall perform partial demolition on these buildings. Based on the roof sample results across the site, the roof materials should be assumed ACM Category I non-friable for the purpose of demolition planning.
- D. After partial demolition, subsequent surveying and sampling of building materials and any equipment within the remaining building will then be performed by the Contractor to determine if additional hazardous materials are present and requiring abatement before completing demolition. Samples will be analyzed on a rush turnaround to minimize schedule impacts. The remaining building structure shall then be further abated (if needed) and subsequent decontaminated prior to completing demolition of these building.
- E. Subcontractor shall remove water from the floor of Building F so the interior can be surveyed and sampled. The water shall be sampled prior to removal to determine handling requirements. After removal of the water, the building interior will be surveyed and sampled.
- F. Building N contained broken lab equipment including mercury spill kits. A Lumex was used to screen the interior of the building for evidence of mercury vapors. The north area of the office building was deemed unsafe for sampling by the sampling crew. Additional sampling will be performed by Contractor to determine if decontamination is required prior to completing the survey and sampling in this area. If mercury decontamination is required, the building interior shall be decontaminated prior to surveying and sampling. After additional surveying and sampling, the ACM and universal waste shall be abated prior to demolition of the building.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 BUILDING DECONTAMINATION**

- A. Decontamination of the building materials, equipment, piping, tanks and ventilation ductwork is required prior to demolition. Decontamination of structural steel for recycling is required, but this can be done on individual pieces of steel after demolition. If the Subcontractor elects to perform limited decontamination as necessary for demolition, payment for such

decontamination shall be included in the lump sum price for demolition. Such decontamination shall be done as follows:

1. Perform decontamination using a pressure washer or other method approved by the Contractor.
2. Collect all liquids generated during decontamination operations and dispose of them according to Section 02 61 00, Removal and Disposal.
3. Subcontractor personnel shall wear appropriate personal protective equipment during decontamination activities.

### 3.02 EXISTING FACILITIES TO BE DEMOLISHED

- A. All existing buildings, piping, tanks and equipment at the Site will be demolished.
- B. Structures:
  1. Existing above-grade structures shall be removed to the top of the foundation.
  2. Walls shall be removed to the top of the concrete slab on grade.
- C. Floor Slabs:
  1. Subcontractor shall leave all at grade floor slabs intact.
  2. Subcontractor shall leave intact any portion of walls that are below the elevation of the top of the floor slab.
- D. Utilities and Related Equipment: Verify with each utility company that all utilities (including, but not limited to, electric, telephone, natural gas, water, storm sewer, and sanitary sewer) are not active or live. Provide written confirmation, for each utility, to the Contractor prior to the Pre-construction meeting. Subcontractor shall not begin any demolition activities without Contractor approval.
  1. Electricity: There is no active electric service to the site.
  2. Water, Telecommunications, and Gas Service:
    - a. There is one water line, one telephone line, one gas line, one sewer line and one mystery line to the site, which must be properly disconnected prior to demolition activities.
    - b. Remove existing utilities encountered during Demolition and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by Contractor.
- E. Tanks and Vessels: If undocumented tanks and vessels are encountered during Demolition, the Subcontractor shall notify Contractor immediately for direction on how to proceed.

F. Air-Conditioning Equipment:

1. Remove air-conditioning equipment without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990.
2. Recover all refrigerants prior to removing air-conditioning equipment and dispose of as Ozone Depleting Substances (ODS) specified elsewhere in this section.

G. Cylinders and Canisters: Remove all fire suppression system cylinders and canisters and dispose of as ODS.

H. Universal Waste Lamps: Manage, contain, package, and label in strict accordance with 40 CFR 273 and any additional state and local regulations.

I. Universal Waste Thermostats: Manage, contain, package, and label in strict accordance with 40 CFR 273 and any additional state and local regulations.

J. Lead-Based Paint:

1. A hazardous materials survey was conducted for the buildings to be demolished. A copy of this survey is included as a supplement to this section. Subcontractor shall consult this document to determine if paint in an area of the building is lead based.
2. Lead-based paint that is adhered to the substrate does not require removal. The item can be handled as construction debris unless PCB concentrations dictate other handling and disposal requirements.

3.03 PROTECTION

A. Dust Control:

1. If at any time dust from any source related to construction activities becomes airborne by wind or construction activity, the Subcontractor shall apply water to the dust areas in amounts required to settle the dust and prevent it from blowing.
2. Asbestos removal (with the exception of roofing materials and in areas that have not been sampled in the structurally unsound Buildings E and southern portion of M) will have already been performed by others when Demolition begins. However, the Subcontractor shall have an employee who is certified and/or trained in identifying ACM and RACM working at the site, and this employee shall observe Demolition activities and verify that no RACM is present.

3. If RACM is identified, the Subcontractor shall notify Contractor. Upon Contractor's approval, Subcontractor shall proceed with Demolition, incorporating the appropriate procedures for managing RACM established in the approved Demolition Plan.
- B. Traffic Control Signs: Where pedestrian and driver safety is endangered in the area of removal Work, use traffic barricades with flashing lights.
- C. Existing Work:
1. Visually assess the site and examine the Drawings and Specifications to determine the extent of the Work before beginning any Demolition or renovation.
  2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Owner; any Subcontractor-damaged items shall be repaired or replaced as directed by Contractor.
  3. Ensure that structural elements are not overloaded as a result of or during performance of the Work. Responsibility for additional structural elements or increasing the strength of existing structural elements as may be required as a result of any Work performed under this Contract shall be that of the Subcontractor. Repairs, reinforcement, or structural replacement must have Contractor approval.
  4. Do not overload pavements to remain.
  5. Protect electrical and mechanical services and utilities to be left in place.
  6. Protect all facility elements not scheduled for Demolition.
- D. Protection of Personnel:
1. During Demolition, continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the Demolition site.
  2. Provide temporary barricades and other forms of protection to protect subcontractors and others from injury due to Demolition Work.
  3. Provide protective measures as required to provide free and safe passage of Contractor's personnel and others to occupied portions of the structure.

### 3.04 SALVAGEABLE METAL DECONTAMINATION

- A. Separate Salvageable Metal from other materials during Demolition activities.
- B. Decontamination of Salvageable Metal may be accomplished by spraying, soaking, wiping, scraping, or the use of abrasives or solvents or any other method approved by the Contractor.

- C. Dispose of decontamination waste and residues in accordance with 40 CFR 761.79(g).
- D. Following confirmation of decontamination from the Contractor, transport and dispose of the decontaminated Salvageable Metal at a metal recycling facility.

### 3.05 NON-CONTAMINATED MATERIALS

- A. Subcontractor shall segregate all materials identified by Contractor as Non-Contaminated Materials. Such materials shall be processed, transported to the onsite consolidation cell, placed and compacted.
- B. The maximum size requirement for Non-Contaminated Materials is 2-foot by 2-foot.

### 3.06 BURNING

- A. The use of burning at the Site for the disposal of refuse and debris will not be permitted.

### 3.07 TITLE TO MATERIALS

- A. Title to equipment (Salvageable Equipment) and materials resulting from Demolition is vested in the Subcontractor upon approval by Contractor of Subcontractor's Demolition Plan, and the resulting authorization by Contractor to begin Demolition.
- B. If decontamination of Salvageable Equipment is necessary, Subcontractor shall perform decontamination as follows:
  - 1. Perform decontamination using a steam cleaner or other method approved by the Contractor.
  - 2. Collect all liquids generated during decontamination operations and containerize, characterize, and dispose of liquids according to Section 02 61 00, Removal and Disposal.
  - 3. Subcontractor personnel shall wear appropriate personal protective equipment during decontamination activities.

### 3.08 DISPOSITION OF MATERIAL

- A. Do not remove equipment and materials without approval of Subcontractor's Demolition Plan by Contractor.
- B. Salvage or recycle equipment and material to the maximum extent possible.

- C. Store salvaged items as approved by Contractor, and remove them from Site before completion of the Subcontract.
- D. Dispose of materials in accordance with Section 02 61 00, Removal and Disposal.

3.09 SPECIALIZED SALVAGE

- A. Ozone Depleting Substances (ODS):
  - 1. Class I and Class II ODS are defined in Section 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting ARI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling.
  - 2. Dispose of all Class I and Class II ODS refrigerants in accordance with the Clean Air Act Amendment of 1990.
  - 3. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g., residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82.
- B. Fire Suppression Containers: Fire suppression system cylinders and canisters with electrical charges or initiators shall be deactivated prior to shipment. Also, safety caps shall be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

**END OF SECTION**

**SECTION 02 61 00  
REMOVAL AND DISPOSAL**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. This section describes the Work involved in removal, handling, testing, and disposal of nonhazardous putrescible waste, hazardous debris, excavated waste, and wastewater if such material is encountered or generated during performance of the Work. Additional information/requirements are included in the *Technical Plan for the Demolition of Buildings at the Former Eagle Zinc Facility*, dated January 2011.

**1.02 REFERENCES**

- A. The following is a list of standards which may be referenced in this section:
  - 1. U.S. Code of Federal Regulations (CFR):
    - a. Environmental Protection Agency (EPA), Title 40, Identification and Listing of Hazardous Waste:
      - 1) Part 261.21, Characteristics of Ignitability.
      - 2) Part 261.22, Characteristics of Corrosivity.
      - 3) Part 261.23, Characteristics of Reactivity.
    - b. Occupational Safety and Health Administration (OSHA), Title 29, Occupational Safety and Health Standards: Part 1910.120, Hazardous Waste Operations and Emergency Response.
  - 2. Resources Conservation and Recovery Act (RCRA).
  - 3. Toxic Substances Control Act (TSCA).

**1.03 DEFINITIONS**

- A. ACM: Asbestos-containing materials.
- B. Contaminated Materials: Putrescible building materials resulting from Demolition, (excluding non-putrescible materials such as concrete, brick, cinderblocks, etc.) that the Contractor has determined exhibits contamination less than TSCA levels and that will be disposed offsite at a RCRA Subtitle D landfill.
- C. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or structure or any part thereof.

- D. Equipment: Salvageable equipment present onsite of which the Subcontractor takes ownership.
- E. Excavated Waste: Buried solid waste, refuse, demolition waste, construction waste, and special waste as defined in the federal and Illinois State regulations. Excavated waste does not include demolition debris, solid waste, refuse, construction waste, or special waste created by Subcontractor incidental to the Work.
- F. Free Product: Free-standing petroleum or chemical liquid product present in excavation or floating on water in excavation.
- G. Hazardous Debris: Material which qualifies as a hazardous or toxic waste as defined by the Resources Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA).
- H. Non-Contaminated Materials: Building materials (concrete, cinderblocks, or bricks with no salvage value) resulting from Demolition that the Contractor has determined to be below TCLP disposal criteria. Subcontractor shall be responsible for processing (2-foot minus), transporting, placing and compacting Non-Contaminated Materials generated during Demolition in the consolidation cell to be constructed at the southwest corner of the site.
- I. RACM: Regulated Asbestos-containing material.
- J. Salvageable Metal: Steel or other metals resulting from Demolition of which the Subcontractor takes ownership and which can be decontaminated for PCBs and lead-based paint.
- K. Trash: Miscellaneous glass, wood, plastic, paper, and other debris resulting from Demolition that will be disposed of offsite at a RCRA Subtitle D landfill.
- L. Universal Waste Lamp: In accordance with 40 CFR 273, the bulb or tube portion of an electric lighting device, examples of which include, but are not limited to, fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.
- M. Universal Waste Thermostat: A temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.

- N. Wastewater: Water produced by Subcontractor's operation, including groundwater removed, stormwater entering excavation pits despite controls, washdown water, used decontamination water, and other water that requires handling by Subcontractor to accomplish the Work. Wastewater may be hazardous or nonhazardous and shall require special handling and testing.

#### 1.04 DESCRIPTION OF WORK

- A. The Subcontractor shall be responsible for disposal of all materials generated during or associated with its portion of the Work, including, but not limited to, soil, residue and water from precipitation events and decontamination activities.
- B. The Subcontractor shall be responsible for and provide all equipment, materials, personnel, and pay for all waste approval charges, tipping fees, disposal charges, taxes, and other costs to dispose of all waste from this project and other material as designated by the Contractor in accordance with these specifications. Subcontractor's responsibility includes preparing necessary waste profiles and manifests and land disposal notifications for the Contractor's or the USEPA's signature and obtaining necessary clearances and approvals from disposal facilities and state agencies.

#### 1.05 SUBMITTALS

- A. Informational Submittals:
1. Prior to commencement of the Work submit the following:
    - a. Permits and certification for material debris, and waste haulers
    - b. Permits, certification, and acceptance requirements for proposed material debris, and wastewater disposal or treatment facilities
    - c. Qualifications:
      - 1) Subcontractor documentation of experience.
      - 2) Subcontractor's Personnel: Documentation personnel proposed for Work with contaminated materials have been 40-hour trained in accordance with 29 CFR 1910.120.
      - 3) Waste Transporter: Documentation of licensing and equipment capabilities.
      - 4) Offsite Disposal and Treatment Facilities: Documentation of licensing, disposal requirements, and acceptance of the waste.
    - d. Inspection reports, including photographs, and other items requested by Contractor.
    - e. Excavation and Water Control Plan demonstrating controls for migration of water into active excavation areas.

- f. Site-specific Health and Safety Plan:
    - 1) In accordance with 29 CFR 1910.120.
    - 2) Include Subcontractor-proposed monitoring, personnel protective gear, worker training and certifications, and emergency procedures.
    - 3) State criteria or measures when air monitoring and work by HAZWOPER-trained personnel are no longer necessary.
  - g. Emergency Response Plan: Details how to handle an emergency during execution of the Work (for example, encountering drums with unknown contents; encountering pockets of hazardous atmospheres; response to spills caused by excavation of materials by Subcontractor or Subcontractor's equipment; response to fire or injured personnel).
- 2. During excavation and removal activities submit the following:
  - a. Daily job progress log detailing information on the review of progress with respect to previously established milestones and schedules, major problems, corrective actions, injury reports, equipment breakdown, and sampling results.
  - b. Weekly excavation plans.
  - c. Copies of manifests or bills of lading, and waste disposal or treatment facility receipts, including weight or volume tickets, for waste materials, solid or liquid, removed from Site and transported to disposal facilities.
- B. After Award and before the Notice to Proceed is issued, the Subcontractor shall submit a certification that the disposal facility(ies) meet the requirements of this specification. The certification shall include the following additional items, at a minimum: facility name, owner name, address, contact name, phone number, and state operating permit number. The disposal facility(ies) are subject to USEPA approval.
- C. Prior to transportation and offsite disposal, Subcontractor shall complete waste profiles for all materials to be disposed offsite and forward these to Contractor. Contractor will review and forward to USEPA to obtain a signature.

D. Submit all manifests required for disposal to the Contractor for signature on behalf of the USEPA prior to removing Contaminated Materials, Trash, Universal Waste Lamps, or Universal Waste Thermostats from the Site. All manifest forms shall be complete when presented to the Contractor for signature, with no information incomplete (i.e., all blanks shall be filled in). The format of the manifest forms shall be acceptable to the Contractor. Manifest shall be four part forms and shall include the following information at a minimum:

1. Manifest number (sequential).
2. Generator information:
  - a. Generator name.
  - b. USEPA ID number.
  - c. Site address.
  - d. Site contact numbers.
  - e. County of origin.
  - f. Billing address.
  - g. Description of waste.
  - h. Waste profile number.
  - i. Generator authorized agent (typed as directed).
  - j. Generator authorized agent (signature).
  - k. Date.
3. Transporter information:
  - a. Transporter name.
  - b. Transporter address.
  - c. Transporter phone number.
  - d. Truck number.
  - e. Driver name (printed).
  - f. Driver signature certifying pickup at the site.
  - g. Date of pickup.
  - h. Driver signature certifying delivery to disposal facility.
  - i. Date of delivery.
4. T/S/D/F information:
  - a. Name of facility.
  - b. Address of facility.
  - c. Phone number of facility.
  - d. Name of authorized agent (printed).
  - e. Authorized agent signature.
  - f. Date material received.

- E. Prior to removal of any wastes from the site, submit a certification from the landfill that the materials from the Site will be accepted. The certification letter shall include a list of the acceptance criteria the landfill will use in determining whether the loads of contaminated wastes will be accepted or rejected.
- F. Submit certificates of disposal for all wastes shipped as non-hazardous waste, hazardous waste or shipped to TSCA-permitted landfills.
- G. Submit a copy of manifests and weight tickets for all loads of materials, including equipment, salvageable items and salvageable metal, weighed on a certified scale at the disposal facility prior to disposal. All weight tickets must be stamped by the disposal facility and list the date, time, gross weight, tare weight, net weight, truck identification number, and hauling company name.
- H. Submit a corresponding weight ticket for all loads of materials from the onsite truck scale to the Contractor within 24 hours of the truck departing the Site.

#### 1.06 QUALITY ASSURANCE

##### A. Qualifications:

- 1. Subcontractor:
  - a. Proven history of successfully executing similar projects for a minimum of 3 years.
  - b. Proper equipment and personnel experienced in similar work.
    - 1) Personnel shall be formally trained in procedures for contaminated soil and water removal (for example, HAZWOPER training).
- 2. Waste Transporter: Licensed waste haulers with trucks equipped with containment and cover systems to transport solid and liquid waste materials on public streets and roads without spillage.
- 3. Offsite Disposal and Treatment Facilities: Proposed facilities shall be licensed to accept the various waste types and quantities to be generated during the Work.

##### B. Codes and Regulations:

- 1. Comply with all federal, state, and local regulations in handling, testing, transporting, and disposing materials and in performing the Work.
- 2. Prior to commencing removal operations, obtain applicable local, state, and federal permits and licenses that directly impact Subcontractor's ability to perform the Work.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Plastic Sheeting:
  - 1. Nylon-reinforced polyethylene sheeting, opaque/frosted.
  - 2. Thickness: Minimum 10 mils.
- B. Tape and Glue: Capable of sealing joints of adjacent sheets of plastic and capable of adhering under wet conditions.
- C. Ballast: Sandbags or other ballast materials of sufficient weight and quantity to maintain polyethylene sheeting securely in place.

### **2.02 TRANSPORT CONTAINERS**

- A. The Subcontractor shall provide and maintain empty transport containers and a vehicle(s) for transport of all materials offsite.
- B. Provide transport containers that are sealed or lined to prevent spillage or leakage of materials or leachate from the materials at any time during filling or after full. Vehicles shall meet all local, state and federal regulations for transport of wastes.
- C. Transport containers shall have covers for use during transport and storage to prevent the release of contaminated wastes or leachate from the containers and prevent precipitation from entering. The covers shall be in place and secure before leaving the Site.

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Subcontractor shall be responsible for the following:
  - 1. Providing means, methods, and equipment necessary for sampling, excavating, collecting, handling, processing, loading, and disposing of hazardous debris, excavated putrescible waste, and wastewater generated as part of the Work.
  - 2. Selecting, providing, and coordinating with qualified transporters, disposal facilities, and treatment facilities for transporting, disposing, and documenting hazardous and nonhazardous waste transportation and disposal in accordance with this Specification.

3. Complying with federal, state, and local requirements for transporting solid and liquid materials from Site through applicable jurisdictions, and be responsible for associated fines, penalties, and other costs for noncompliance.
4. Obtaining and submitting acceptance letters and receipts for materials disposed at each facility.
5. Including provisions in its construction sequence and schedule for sampling, analysis, and review of sampling results.

B. Excavation and Water Control Plan:

1. Plan shall include, but not be limited to, the following:
  - a. Means and sequencing of excavation.
  - b. Proposed locations, layout, and controls for materials stockpile areas.
  - c. Numbers and types of proposed equipment.
  - d. Methods of handling, segregating, and stockpiling excavated materials.
  - e. Methods of controlling water and sediment in excavation and proposed stockpile areas.
  - f. Proposed locations, types, and capacities of temporary water storage facilities, if required.
  - g. Sheet piling, shoring, and bracing, as required.

3.02 WASTE EXCAVATION

- A. Hazardous debris and putrescible waste may be encountered during excavation for facilities at Site. Material shall be removed, handled, and disposed in accordance with federal and State environmental regulations.
- B. Conduct Work in excavated area in accordance with Subcontractor's Site-specific safety plan.
- C. Excavate methodically and submit weekly excavation plans no later than Thursday of the week preceding the Work.
- D. Immediately stop excavation and notify Contractor upon encountering material unanticipated or outside scope of this Specification. This may include, but is not limited to, free product, tanks, ACM, or solid material other than excavated waste.
- E. Over-excavation:
  1. Excavate only the amount of soil required to construct the Work shown on Drawings.

2. Over-excavation of additional hazardous debris, solid waste, or soil beyond amount required for construction of foundation and subgrade preparation shall not be performed without written authorization by Contractor.
3. Over-excavation of hazardous debris, solid waste, or soil that is not authorized by Contractor shall be disposed and replaced at Subcontractor's own expense.

### 3.03 FREE PRODUCT REMOVAL

- A. In the event that free product is encountered in the excavation:
1. Immediately notify Contractor to determine appropriate sampling, removal, and disposal requirements.
  2. Remove product in a manner that minimizes the spread of contamination into previously uncontaminated zones by using a containment recovery and storage system to contain and remove product.
  3. Provide onsite storage suitable for recovered material.
  4. Material shall remain onsite until Subcontractor completes a characterization analysis.
  5. Material shall not be transported to a disposal facility until analysis is complete.

### 3.04 WASTE HANDLING AND DISPOSAL

- A. To the extent possible, schedule and coordinate Work such that excavated waste and wastewater can be loaded and removed from Site with minimal handling or storage requirements.
- B. Where temporary storage or stockpiling is necessary, provide and maintain adequate containment and environmental controls, including but not limited to containers, dikes, linings, covers, erosion and sediment controls, and other best management practices of sufficient capacity to store materials without unauthorized release of contaminants into ground, air, or surface water. Stockpiles shall be covered at the end of each work day.
- C. Subcontractor shall maintain stockpiles of materials in an orderly manner. Materials classified as Non-Contaminated Materials and Contaminated Materials shall be maintained separately during and after demolition activities. Subcontractor shall include methods of maintaining stockpiles in its Work Plan, which is described in Section 01 31 13, Project Coordination.
- D. Provide labor, equipment, and materials to stabilize or process waste materials as necessary to meet minimum requirements for offsite transport and disposal.

E. Transportation:

1. Provide sealed or lined vehicles and other measures necessary to prevent spillage or tracking of waste materials, mud, or other debris on local streets or roads.
2. Inspect and document vehicles and containers for proper operation and covering.
3. Inspect vehicles and containers for proper markings, manifests, and other requirements for waste shipment.
4. Perform and document decontamination procedures prior to leaving Site and again before leaving disposal or treatment facility.

- E. Obtain and submit receipts of confirmation from disposal or treatment facilities that solid and liquid wastes were accepted for disposal or treatment, including weight tickets or other confirmation of quantities received.

3.05 LOADING OF MATERIALS DESIGNATED FOR OFFSITE DISPOSAL

- A. The Subcontractor shall prepare manifest forms and/or shipping papers for all wastes leaving the site in accordance with applicable regulations and the TSD facility's requirements. A USEPA employee or designee will sign the manifests for wastes leaving the site. The Subcontractor shall be responsible for tracking the manifests and shipping papers and shall immediately notify the Contractor of any problems in completing shipments and disposal of wastes. The Subcontractor shall provide written evidence in the form of properly completed manifests that all waste material has been properly managed. All manifests, weight tickets, and shipping papers shall be provided to the Contractor within 48 hours of shipment.
- B. Each transport container shall be visually inspected by the Subcontractor for leaks, rips, or container damage prior to being loaded. Transport containers which are found to be leaking or damaged shall not be loaded until the damage is repaired. The Subcontractor shall prepare transport containers to prevent spillage or contamination.
- C. All vehicles, personnel, and equipment shall be decontaminated at a designated decontamination pad before leaving the Site.

3.06 HAULING OF MATERIALS DESIGNATED FOR OFFSITE DISPOSAL

- A. Contain all wastes via proper transport containers and covers and transport wastes in hauling vehicles from the Subcontractor's Work Area to the disposal facilities. Acquire all permits, and meet all applicable standards and regulations for hauling these materials over public roads.

- B. The Subcontractor shall be responsible for loading, labeling, placarding, marking, and transporting all wastes in accordance with applicable Federal, state, and local regulations.
- C. The haul routes from the decontamination pad to the offsite roads are to be maintained as clean access roads. The Subcontractor shall maintain the roads as such at all times. Spillage that occurs shall be cleaned up immediately by the Subcontractor.
- D. The Subcontractor shall coordinate vehicle inspection before leaving the Site with the Contractor. Quantities shall be recorded prior to leaving the Site and at the disposal facilities.
- E. Use only transporters that are licensed to haul the wastes specified.
- F. The Subcontractor will also be responsible for transport of empty transport containers and transport vehicle(s) from the disposal facility back to the Site.
- G. The maximum number of trucks onsite awaiting loading of materials for transport offsite shall be five. Under no circumstances shall trucks be waiting outside the site entrance in the morning before the gate is unlocked or in the evening after work for the day is done.

### 3.07 OFFSITE DISPOSAL FACILITIES

- A. Dispose of materials designated for offsite disposal as follows:
  - 1. Equipment and Salvageable Items: Recycle or salvage offsite as appropriate.
  - 2. Salvageable Metal: Recycle, smelt, or landfill as appropriate.
  - 3. Trash and Contaminated Materials: Dispose at a RCRA Subtitle D landfill.
  - 4. Universal Waste Lamps and Universal Waste Thermostats: Dispose in accordance with 40 CFR 273 and Title 35, Section 733 of the Illinois Administrative Code.
- B. Determination of materials classification for offsite disposal:
  - 1. The Contractor will determine the classification of all materials in the building prior to demolition. Subcontractor shall keep materials segregated following demolition based upon these classifications.
  - 2. Contractor will determine classification of Salvageable Metal prior to demolition.
  - 3. Subcontractor shall collect, analyze, and provide to Contractor confirmation samples of decontaminated unpainted Salvageable Metal

to verify it can be recycled. A minimum of one wipe sample for every 20 tons shall be collected.

4. Alternatively, if NACE Visual Standard No. 2, Near White Blast Cleaned Surface Finish, applies, Subcontractor shall provide Contractor with evidence of appropriate training and/or experience for the employee who will be determining compliance with that standard. Contractor will also visually inspect decontaminated steel to verify it meets that standard.
- C. Dispose of contaminated wastes in accordance with applicable local, state, and federal requirements.
- D. Selection of a disposal facility that meets these requirements is the responsibility of the Subcontractor. However, the Subcontractor must obtain prior approval from USEPA for each disposal facility that accepts materials from the Site.
- E. If hazardous wastes, beyond those identified in the Subcontract Documents, are encountered, notify Contractor immediately. Subcontractor shall dispose of said wastes in accordance with applicable local, state, and federal requirements.
- F. Contractor has collected and analyzed some waste profile samples. If disposal facilities require additional information, Subcontractor shall perform the additional testing. Subcontractor shall be responsible for ensuring the acceptance of the waste material at the approved disposal facility and that the facility provides the appropriate disposal service.
- G. All waste shall be delivered directly to the landfill after leaving the site. No overnight storage shall be permitted. Should an emergency arise and overnight storage be necessary, notify the Contractor immediately.
- H. Any RACM encountered during Demolition that was not abated by the Asbestos Subcontractor shall be handled, transported, and disposed of in accordance with 29 CFR 1910.134; 29 CFR 1910.1001; 29 CFR 1926.1101; 40 CFR 61, Subpart M; Title 77, Section 855.220 of the Illinois Administrative Code; and any other state, local, and federal codes which regulate such work.

### 3.08 ONSITE DISPOSAL OF MATERIALS

- A. Contractor will determine if materials can be classified as Non-Contaminated Materials.

- B. Non-Contaminated Materials (concrete, bricks, and cinderblock) that are not floor slab concrete will be segregated from other materials. Subcontractor shall then size them to 2-foot minus and transport to the onsite consolidation cell for disposal. Subcontractor is responsible for placing, grading and compacting material placed in consolidation cell in accordance with the design drawings and as directed by Contractor. Demolition debris waste shall be placed in uniform lifts to the proposed waste grades as shown on the drawings for the on-site management cell. Waste lift thickness shall not exceed two feet with a maximum particle size of 1 foot.

### 3.09 DISPOSAL OF LIQUIDS

- A. Liquids anticipated to be generated or encountered during the remedial activities include, but are not necessarily limited to:
  - 1. Water from precipitation events that contacts stockpiles of Contaminated Materials.
  - 2. Water from building decontamination activities.
  - 3. Water from equipment and personnel decontamination activities.
  - 4. Oily liquids present in small quantities (<1 gallon) in discrete locations within the building.
- B. All liquids generated and encountered during execution of the Work shall be containerized, characterized as necessary for disposal, and disposed offsite at an appropriate facility.

### 3.10 EQUIPMENT DECONTAMINATION

- A. Decontaminate equipment that has come into contact with hazardous soil or debris, solid waste, or impacted water by methods approved by Contractor.
- B. Wastewater and sediment generated by decontamination activities shall be contained and treated or disposed of in accordance with provisions stated in this section.

## END OF SECTION

**SECTION 31 10 00  
SITE CLEARING**

**PART 1 GENERAL**

**1.01 DEFINITIONS**

- A. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface.
- C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots to a depth of 6 inches below subgrade elevations.
- D. Scalping: Removal of sod without removing more than upper 3 inches of topsoil.
- E. Stripping: Removal of topsoil remaining after applicable scalping is completed.
- F. Project Limits: Areas, as shown or specified, within which Work is to be performed.

**1.02 SUBMITTALS**

- A. Action Submittals: Drawings clearly showing clearing, grubbing, and stripping limits.

**1.03 QUALITY ASSURANCE**

- A. Obtain Contractor's approval of staked clearing, grubbing, and stripping limits prior to commencing clearing, grubbing and stripping.

**1.04 SCHEDULING AND SEQUENCING**

- A. Prepare Site only after adequate erosion and sediment controls are in place. Limit areas exposed uncontrolled to erosion during installation of temporary erosion and sediment controls.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 GENERAL**

- A. Clear, grub, and strip areas actually needed for waste disposal, borrow or Site improvements within limits shown or specified.
- B. Do not injure or deface vegetation that is not designated for removal.

**3.02 LIMITS**

- A. As follows, but not to extend beyond Project limits:
  - 1. Excavation: 5 feet beyond top of cut slopes.
  - 2. Trench Excavation: 4 feet from trench centerline, regardless of actual trench width.
  - 3. Fill:
    - a. Clearing and Grubbing: 5 feet beyond toe of permanent fill.
    - b. Stripping and Scalping: 2 feet beyond toe of permanent fill.
  - 4. Waste Disposal:
    - a. Clearing: 5 feet beyond perimeter.
    - b. Scalping and Stripping: Not required.
    - c. Grubbing: Around perimeter as necessary for neat finished appearance.
- B. Remove rubbish, trash, and junk from entire area within Project limits.

**3.03 TEMPORARY REMOVAL OF INTERFERING PLANTINGS**

- A. Photograph and document location, orientation, and condition of each plant prior to its removal. Record sufficient information to uniquely identify each plant removed and to assure accurate replacement.

**3.04 CLEARING**

- A. Clear areas within limits shown or specified.
- B. Fell trees so that they fall away from facilities and vegetation not designated for removal.
- C. Cut stumps not designated for grubbing flush with ground surface.
- D. Cut off shrubs, brush, weeds, and grasses to within 2-inches of ground surface.

3.05 GRUBBING

- A. Grub areas within limits shown or specified.

3.06 SCALPING

- A. Do not remove sod until after clearing and grubbing is completed and resulting debris is removed.
- B. Scalp areas within limits shown or specified.

3.07 STRIPPING

- A. Do not remove topsoil until after scalping is completed.
- B. Strip areas within limits to minimum depths shown or specified. Do not remove subsoil with topsoil.

3.08 TREE REMOVAL WITHIN AND OUTSIDE CLEARING LIMITS

- A. Remove Within Project Limits:
  - 1. Dead, dying, leaning, or otherwise unsound trees that may strike and damage Project facilities in falling.
  - 2. Trees designated by Owner or Contractor.
- B. Cut stumps off flush with ground, remove debris, and if disturbed, restore surrounding area to its original condition.
- C. Stumps and roots located within the waste management cell perimeter will be cut and removed to the Subgrade elevations prior to waste placement.

3.09 TREE TOPPING

- A. Top trees adjacent to Project rights-of-way and easements for overhead utilities so remaining portion will not strike facilities in falling. Where topping will remove more than 1/2 of a tree's crown, remove entire tree.

3.10 SALVAGE

- A. Saleable log timber may be sold to Subcontractor's benefit. Promptly remove from Project Site.
- B. Sod with commercial value may be sold to Subcontractor's benefit. Promptly remove from Project Site.

### 3.11 DISPOSAL

#### A. Clearing and Grubbing Debris:

1. Dispose of debris offsite.
2. Debris may be buried in designated onsite disposal areas to minimum depth of 3 feet below final grade. In lieu of onsite burial, dispose of debris offsite.
3. Burning of debris onsite will not be allowed.
4. Dispose of unburned and noncombustible debris offsite.
5. Unburned and noncombustible debris may be buried in designated onsite disposal areas to a minimum depth of 3 feet below existing grade. In lieu of onsite burial, dispose of debris offsite.
6. Woody debris may be chipped. Chips may be sold to Subcontractor's benefit or used for landscaping onsite as mulch or uniformly mixed with topsoil, provided that resulting mix will be fertile and not support combustion. Dispose of chips that are unsaleable or unsuitable for landscaping or other uses with unchipped debris.
7. Limit offsite disposal of clearing and grubbing debris to locations that are approved by federal, state, and local authorities, and that will not be visible from Project.

#### B. Scalpings: As specified for clearing and grubbing debris.

#### C. Strippings:

1. Dispose of strippings that are unsuitable for topsoil or that exceed quantity required for topsoil offsite or in waste disposal areas shown or approved by Contractor.
2. Stockpile topsoil in sufficient quantity to meet Project needs. Dispose of excess strippings as specified for clearing and grubbing.

**END OF SECTION**

**SECTION 31 23 13  
SUBGRADE PREPARATION**

**PART 1 GENERAL**

**1.01 REFERENCES**

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
  - a. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).

**1.02 DEFINITIONS**

- A. Optimum Moisture Content: As defined in Section 31 23 23, Fill and Backfill.
- B. Prepared Ground Surface: Ground surface after completion of clearing and grubbing, scalping of sod, stripping of topsoil, excavation to grade, and scarification and compaction of subgrade.
- C. Relative Compaction: As defined in Section 31 23 23, Fill and Backfill.
- D. Subgrade: Layer of existing soil after completion of clearing, grubbing, scalping of topsoil prior to placement of fill, roadway structure or base for floor slab.
- E. Proof-Rolling: Testing of subgrade by compactive effort to identify areas that will not support the future loading without excessive settlement.

**1.03 SEQUENCING AND SCHEDULING**

- A. Complete applicable Work specified in Sections 31 10 00, Site Clearing, prior to subgrade preparation.

**1.04 QUALITY ASSURANCE**

- A. Notify Contractor when subgrade is ready for compaction or proof-rolling or whenever compaction or proof-rolling is resumed after a period of extended inactivity.

**1.05 ENVIRONMENTAL REQUIREMENTS**

- A. Prepare subgrade when unfrozen and free of ice and snow.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION**

**3.01      GENERAL**

- A.    Keep subgrade free of water, debris, and foreign matter during compaction or proof-rolling.
- B.    Bring subgrade to proper grade and cross-section and uniformly compact surface.
- C.    Do not use sections of prepared ground surface as haul roads. Protect prepared subgrade from traffic.
- D.    Maintain prepared ground surface in finished condition until next course is placed.

**3.02      COMPACTION**

- A.    Under Earthfill: Compact upper 6-inches to a minimum of 95 percent compaction of the maximum dry density as determined in accordance with ASTM D698. A proof-roll may be performed in place of compaction testing of the subgrade if observed and approved by the Contractor.

**3.03      MOISTURE CONDITIONING**

- A.    Dry Subgrade: Add water, then mix to make moisture content uniform throughout.
- B.    Wet Subgrade: Aerate material by blading, discing, harrowing, or other methods, to hasten drying process.

**3.04      TESTING**

- A.    Proof-roll subgrade with equipment specified in Article Compaction to detect soft or loose subgrade or unsuitable material, as determined by Contractor.

**3.05      CORRECTION**

- A.    Soft or Loose Subgrade:
  - 1.    Adjust moisture content and recompact, or;
  - 2.    Over excavate as specified by Contractor, and replace with suitable material from the excavation, as specified in Section 31 23 23, Fill and Backfill.

- B. Unsuitable Material: Over excavate as specified by Contractor, and replace with suitable material from the excavation, as specified in Section 31 23 23, Fill and Backfill.

**END OF SECTION**

**SECTION 31 23 23  
FILL AND BACKFILL**

**PART 1 GENERAL**

**1.01 REFERENCES**

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
  - a. C117, Standard Test Method for Materials Finer Than 75-Micrometers (No. 200) Sieve in Mineral Aggregates by Washing.
  - b. C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
  - c. D75, Standard Practice for Sampling Aggregates.
  - d. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  - e. D1556, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
  - f. D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

**1.02 DEFINITIONS**

A. Relative Compaction:

1. Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D698.
2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by Contractor.

B. Optimum Moisture Content:

1. Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction.
2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.

C. Prepared Ground Surface: Ground surface after completion of required demolition, clearing and grubbing, scalping of sod, stripping of topsoil, excavation to grade, and subgrade preparation.

- D. Completed Course: A course or layer that is ready for next layer or next phase of Work.
- E. Lift: Loose (uncompacted) layer of material.
- F. Well-Graded:
  - 1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.
  - 2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
  - 3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- G. Influence Area: Area within planes sloped downward and outward at 60-degree angle from horizontal measured from:
  - 1. 1 foot outside outermost edge at base of foundations or slabs.
  - 2. 1 foot outside outermost edge at surface of roadways or shoulder.
  - 3. 0.5 foot outside exterior at spring line of pipes or culverts.
- H. Borrow Material: Material from required excavations or from designated borrow areas on or near Site.
- I. Selected Backfill Material: Materials available onsite that Contractor determines to be suitable for specific use.
- J. Imported Material: Materials obtained from sources offsite, suitable for specified use.
- K. Structural Fill: Fill materials as required under structures, pavements, and other facilities.
- L. Embankment Material: Fill materials required to raise existing grade in areas other than under structures.

### 1.03 SUBMITTALS

- A. Action Submittals:
  - 1. Samples:
    - a. Imported material taken at source.
    - b. Any existing geotechnical laboratory testing on imported fill.

B. Informational Submittals:

1. Manufacturer's data sheets for compaction equipment.
2. Certified test results from independent testing agency.

1.04 QUALITY ASSURANCE

A. Notify Contractor when:

1. Soft or loose subgrade materials are encountered wherever embankment or site fill is to be placed.
2. Fill material appears to be deviating from Specifications.

1.05 SEQUENCING AND SCHEDULING

- A. Complete applicable Work specified in Section 31 10 00, Site Clearing; and Section 31 23 13, Subgrade Preparation, prior to placing fill or backfill.
- B. Do not place granular base, subbase, or surfacing until after subgrade has been prepared as specified in Section 31 23 13, Subgrade Preparation.

**PART 2 PRODUCTS**

2.01 SOURCE QUALITY CONTROL

A. Gradation Tests:

1. As necessary to locate acceptable sources of imported material
2. During production of imported material, complete laboratory testing as outlined in the Construction Quality Assurance Plan.

B. Samples: Collected in accordance with ASTM D75 and as outlined in the Construction Quality Assurance Plan.

1. Clearly mark to show source of material and intended use.

2.02 SELECTED BACKFILL MATERIAL

- A. Excavated material from required excavations free from rocks larger than 3 inches, from roots and other organic matter, ashes, cinders, trash, debris, and other deleterious materials.
- B. Material containing more than 10 percent gravel, stones, or shale particles is unacceptable.

- C. Provide imported material of equivalent quality, if required to accomplish Work.

#### 2.03 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminates, or contaminants deleterious to proper compaction.

#### 2.04 LOW PERMEABILITY SOIL

- A. Uncontaminated imported cohesive material.
- B. Free from roots, organic matter, or other deleterious material.
- C. Particle Size: Maximum 2 inches (after compaction).
- D. Classification: Unified Soil Classification System CL, ML, MH, SM, SC, CL-ML, or CH in accordance with ASTM D2487.
- E. Permeability: Maximum of  $1 \times 10^{-5}$  centimeters per second (cm/sec) per ASTM D5084.
- F. Perform remolded hydraulic conductivity testing per ASTM D5084 at 95 percent compaction of the maximum dry density and at optimum moisture content as determined by ASTM D698. If the specified permeability cannot be met, moisture content and compaction then may be adjusted to achieve the desired maximum value of  $1 \times 10^{-5}$  cm/sec.

#### 2.05 VEGETATIVE COVER

- A. Uncontaminated imported material from off-site, free of particles larger than 2-inches once placed. Material is to be Classified as OL or OH in accordance with the Unified Soil Classification System (ASTM D2487).
- B. Vegetative Cover will have an average organic content of 3 percent and a pH of 7 (plus or minus 1).

#### 2.06 LEVELING MATERIAL

- A. Material located from onsite sources consisting of slag and smelter materials.
- B. Particle Size: Maximum 6-inches (after compaction).

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.
- B. Place and spread fill and backfill materials in horizontal lifts of uniform thickness, in a manner that avoids segregation, and compact each lift to specified densities prior to placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.
- C. Do not place fill or backfill, if fill or backfill material is frozen, or if surface upon which fill or backfill is to be placed is frozen.
- D. If pipe, conduit, duct bank, or cable is to be laid within fill or backfill:
  - 1. Fill or backfill to an elevation 2 feet above top of item to be laid.
  - 2. Excavate trench for installation of item.
  - 3. Install bedding, if applicable.
  - 4. Install item.
  - 5. Backfill envelope zone and remaining trench, as specified in this section.
- E. Tolerances:
  - 1. Final Lines and Grades: Within a tolerance of 0.1 foot unless dimensions or grades are shown or specified otherwise.
  - 2. Grade to establish and maintain slopes and drainage as shown. Reverse slopes are not permitted.
- F. Settlement: Correct and repair any subsequent damage to structures, pavements, curbs, slabs, piping, and other facilities, caused by settlement of fill or backfill material.

### **3.02 SELECTED BACKFILL MATERIAL**

- A. Selected backfill for use in general site grading, ditch, and berm construction. Place selected backfill material as follows:
  - 1. Maximum 8-inch thick lifts.
  - 2. Place and compact fill across full width of embankment.
  - 3. Compact to minimum 90 percent compaction as determined in accordance with ASTM D698.

4. Dress completed areas with appropriate seeding as outline in these technical specifications.

### 3.03 LOW PERMEABILITY SOIL

A. Unless otherwise shown, place low permeability soil as follows:

1. Place low permeability soil in maximum 6-inch lifts (after compaction).
2. Compact to a minimum compaction of 95 percent of a maximum dry density and at or above optimum moisture content as determined by ASTM D698.

### 3.04 VEGETATIVE COVER SOIL

A. Unless otherwise shown, place the vegetative cover soil as follows:

1. Place vegetative cover soil in one 6-inch maximum lift thickness.
2. After vegetative cover soil placement is complete, subcontractor will use root rake or alternate equivalent equipment to remove roots and other debris greater than 2-inches.

### 3.05 LEVELING MATERIAL

A. Unless otherwise shown, place the leveling material as follows:

1. Place the leveling material in one 12-inch thick lift.
2. Layer must be graded in accordance with the Drawings and will serve as the subgrade for the placement of the low permeability clay.

### 3.06 SITE TESTING

A. Gradation:

1. One sample from each 1,500 cubic yards of finished product or more often as determined by Contractor, if variation in gradation is occurring, or if material appears to depart from Specifications.
2. If test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
3. Remove material placed in Work that does not meet Specification requirements.

- B. In-Place Density Tests: In accordance with ASTM D6938. During placement of materials, test as follows:
1. Low permeability soil: Three tests per acre per lift or at least one test per day per area worked.
  2. Selected backfill material: One test per acre per lift or at least one test per day per area worked.

**END OF SECTION**

## **Appendix D**

### **Stormwater Calculations**

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# Time of Concentration & Travel Time Worksheet (TR-55 Methodology)

Project: Eagle Zinc Remedial Design  
 Location: Hillsboro, IL  
 Conditions: Existing, Remedial Site Only  
 By: Elise Ibendahl/STL  
 Date: 1/11/2011

## Sheet Flow (Applicable to $T_c$ only)

- 1.) Surface Description (table 3-1)
- 2.) Manning's roughness coeff.,  $n$  (table 3-1)
- 3.) Flow length,  $L$  (total  $L \leq 300$  ft)
- 4.) Two-yr 24-hr rainfall,  $P_2$  bulletin 71
- 5.) Land Slope,  $s$

$$T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute  $T_t$

Segment ID			
	Slag		
	0.011		
ft	200		
in	3.25		
ft/ft	0.1		
hr	0.02	+	
		=	0.02

## Shallow concentrated flow

- 7.) Surface description (paved or unpaved)
- 8.) Flow length,  $L$
- 9.) Watercourse slope,  $s$
- 10.) Average velocity,  $v$  (figure 3-1)

$$T_t = \frac{L}{3600 v}$$

Compute  $T_t$

Segment ID			
	Unpaved		
ft	0		
ft/ft	0		
ft/s	0		
hr	0.00	+	
		=	0.00

## Channel Flow

- 12.) Cross-sectional flow area,  $a$
- 13.) Wetted Perimeter,  $P_w$
- 14.) Hydraulic Radius,  $r = a/P_w$
- 15.) Channel Slope,  $s$
- 16.) Manning's roughness coeff.,  $n$

$$v = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute  $r$

Compute  $v$

- 18.) Flow Length,  $L$

$$T_t = \frac{L}{3600 v}$$

Compute  $T_t$

Segment ID			
ft <sup>2</sup>	0		
ft	0		
ft	0		
ft/ft			
ft/s	0		
ft			
hr	0	+	
		=	0

- 20.) Watershed or subarea  $T_c$  or  $T_t$  ( add  $T_t$  in steps 6, 11, 19)

hr	0.02
min	1.10

Use 5-min minimum  $t_c$

# Time of Concentration & Travel Time Worksheet (TR-55 Methodology)

Project: Eagle Zinc Remedial Design  
 Location: Hillsboro, IL  
 Conditions: Proposed, Remedial Site Only  
 By: Elise Ibendahl/STL  
 Date: 1/11/2011

## Sheet Flow (Applicable to $T_c$ only)

- 1.) Surface Description (table 3-1)
- 2.) Manning's roughness coeff.,  $n$  (table 3-1)
- 3.) Flow length,  $L$  (total  $L \leq 300$  ft)
- 4.) Two-yr 24-hr rainfall,  $P_2$  bulletin 71
- 5.) Land Slope,  $s$

$$6.) T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute  $T_t$

Segment ID			
	Grass		
	0.24		
ft	85		
in	3.25		
ft/ft	0.1		
hr	0.11	+	
			= 0.11

## Shallow concentrated flow

- 7.) Surface description (paved or unpaved)
- 8.) Flow length,  $L$
- 9.) Watercourse slope,  $s$
- 10.) Average velocity,  $v$  (figure 3-1)

$$11.) T_t = \frac{L}{3600 v}$$

Compute  $T_t$

Segment ID			
	Unpaved		
ft	0		
ft/ft	0		
ft/s	0		
hr	0.00	+	
			= 0.00

## Channel Flow

- 12.) Cross sectional flow area,  $a$
- 13.) Wetted Perimeter,  $P_w$
- 14.) Hydraulic Radius,  $r = a/P_w$
- 15.) Channel Slope,  $s$
- 16.) Manning's roughness coeff.,  $n$

$$17.) v = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute  $r$

Compute  $v$

Segment ID			
ft <sup>2</sup>	0		
ft	0		
ft	0		
ft/ft			
ft/s	0		
ft			
hr	0	+	
			= 0

- 18.) Flow Length,  $L$

$$19.) T_t = \frac{L}{3600 v}$$

Compute  $T_t$

- 20.) Watershed or subarea  $T_c$  or  $T_t$  ( add  $T_t$  in steps 6, 11, 19)

hr	0.11
min	6.53

# Time of Concentration & Travel Time Worksheet (TR-55 Methodology)

Project: Eagle Zinc Remedial Design  
 Location: Hillsboro, IL  
 Conditions: Area Tributary to Proposed Ditch  
 By: Elise Ibendahl/STL  
 Date: 1/11/2011

## Sheet Flow (Applicable to $T_c$ only)

- 1.) Surface Description (table 3-1)
- 2.) Manning's roughness coeff.,  $n$  (table 3-1)
- 3.) Flow length,  $L$  (total  $L \leq 300$  ft)
- 4.) Two-yr 24-hr rainfall,  $P_2$  bulletin 71
- 5.) Land Slope,  $s$

$$6.) T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute  $T_t$

Segment ID			
	Grass		
	0.24		
ft	95		
in	3.25		
ft/ft	0.1		
hr	0.12	+	
		=	0.12

## Shallow concentrated flow

- 7.) Surface description (Use paved, because of slag)
- 8.) Flow length,  $L$
- 9.) Watercourse slope,  $s$
- 10.) Average velocity,  $v$  (figure 3-1)

$$11.) T_t = \frac{L}{3600 v}$$

Compute  $T_t$

Segment ID			
	Paved		
ft	150		
ft/ft	0.045		
ft/s	3.25		
hr	0.01	+	
		=	0.01

## Channel Flow

- 12.) Cross sectional flow area,  $a$
- 13.) Wetted Perimeter,  $P_w$
- 14.) Hydraulic Radius,  $r = a/P_w$
- 15.) Channel Slope,  $s$
- 16.) Manning's roughness coeff.,  $n$

$$17.) v = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute  $r$

Compute  $v$

Segment ID			
ft <sup>2</sup>	3		
ft	5.47		
ft	0.55		
ft/ft	0.025		
	0.025		
ft/s	6.31		0.00
ft	200		
hr	0.01	+	
		=	0.008801

- 18.) Flow Length,  $L$

$$19.) T_t = \frac{L}{3600 v}$$

Compute  $T_t$

- 20.) Watershed or subarea  $T_c$  or  $T_t$  (add  $T_t$  in steps 6, 11, 19)

hr	0.14
min	8.44

<b>Proposed Ditch Sizing Calculations</b>								
Eagle Zinc Remedial Design								
Hillsboro, IL								
Area Tributary to Proposed Ditch								
Purpose: Compute the flow that occurs in a ditch with two different side slopes and a bottom width.								
Assume Manning's formula.								
Created by: Mark Mittag/MKE								
Calculations by: Elise Ibendahl/STL, 1/11/2011								
z1:	2		z1 = ditch side slope 1					
z2:	2		z2 = ditch side slope 2					
b:	1		b = bottom width					
Slope (ft./ft.):	0.02500		Slope = slope along flow line of ditch					
Manning's n:	0.025		Excavated open channel, short grass, few weeds					
Depth (ft.):	1.00		Depth = depth of flow in the ditch					
Area:	3.00		Area = cross-sectional area of flow in ditch					
W.P.:	5.47		W.P. = wetted perimeter of ditch					
Flow (cfs):	18.94		Flow = flow through ditch using Manning's equation					
Velocity (ft./sec.):	6.31		Velocity = velocity of flow in the ditch					
Top Width (ft.):	5.00		Top Width = top width water flowing in ditch					
Hydraulic Depth (ft.):	0.60		Hydraulic Depth = defined as Area/Top width					
Froude Number:	1.44		Froude Number = defined as $V/\sqrt{g \cdot \text{Hydraulic Depth}}$					
Conjugate Depth (ft.):	1.59		Conjugate Depth = $(\text{Depth}/2) \cdot (\sqrt{1+8 \cdot F\#} - 1)$					
Shear Stress (lb/ft <sup>2</sup> ):	1.56		Shear Stress = $(62.4) \cdot \text{depth} \cdot \text{slope}$					



## **Appendix E**

### **Cost Estimate**

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Alternative Name		Bldg Alternative 2 (revised 1-25-2011) Onsite Consolidation and Temporary Cover		COST ESTIMATE SUMMARY		
Site	Eagle Zinc	Description	Building Demolition, ACM abatement Disposal of ACM at Subtitle D landfill Building and Scrap Decon of scrap metal and temporary storage onsite Cost estimate does not include credit for scrap value Transport and disposal at Subtitle D landfill of 1500 tons of putrescible waste Onsite Consolidation of 11,000 cy of demo debris from buildings Temporary cover over 0.8 acre area			
Location	Hillsboro, Illinois					
Phase	Building Demolition					
Base Year	2011					
Date	1/25/2011					
CAPITAL COSTS						
DESCRIPTION		QTY	UNIT	UNIT COST	TOTAL	NOTES
Building Demolition Including		1	LS	\$3,083,314	\$3,083,314	<b>Revised Estimate Includes Added Scope</b> Perimeter Air Monitoring, Dust Control ACM Abatement (all bldgs), Drainage Grading, Universal Waste Removal, Bldg Decontamination, Utility Abandonment, <b>Net Increase \$804,223</b>
Mob/Demob, Planning Doc, P&P Bond						
Site Preparation, Abandon Utilities						
ACM Abatement						
Universal Waste Removal						
Bldg Decon and Demolition to slab						
Site Restoration Drainage Grading						
Dust Cntrl & Perimeter Air Monitoring						
SUBTOTAL					\$3,083,314	
Putrescible Waste Disposal						
Transport to Allied Waste Landfill in Litchfield, Ill		1,500	TN	\$11.00	\$16,500	Bodine Proposal waste mass estimate (per USEPA), REACT Proposal unit cost ( <b>Revised 10.31.10</b> )
Waste Disposal at Allied Waste Landfill		1,500	TN	\$43.37	\$65,055	Bodine Proposal waste mass estimate (per USEPA), REACT Proposal unit cost ( <b>Revised 10.31.10</b> )
SUBTOTAL					\$81,555	
Steel Salvage Value						
Steel salvage		2,593	TN	\$0	\$0	Bodine Proposal steel mass and salvage volume estimate was 2,593 tons
0.8 Acre Temporary Cover Construction						Area of cover is 0.8 Acre to consolidate 11,000 cy
P&P Bond, Plans Submittals, Mobilization, Site Preparation & SESC Controls		1	LS	\$27,500	\$27,500	<b>Added Scope (Revised 10.31.10)</b>
Site Grading Temp Onsite Landfill Area		13,333	SY	\$3.15	\$41,999	<b>RSMeans (Revised 10.31.10)</b>
Low Permeability Clay Layer (6-inches thick)		1,500	CY	\$26.00	\$39,000	<b>RSMeans (Revised 10.31.10)</b>
Vegetation Layer (6-inches thick)		1,500	CY	\$14.00	\$21,000	<b>RSMeans (Revised 10.31.10)</b>
Seeding Vegetation Cover		3.1	AC	\$4,846.00	\$15,023	<b>RSMeans (Revised 10.31.10)</b>
Cover O&M (POP 5-years, up to 6 events per year)		30.0	Evnt	\$400.00	\$12,000	<b>RSMeans (Revised 10.31.10)</b>
SUBTOTAL					\$156,522	
Onsite Landfill Demo Debris Loading and Placement						
Handling and Loading		11,906	CY	\$6.39	\$76,079	<b>(Revised 10.31.10)</b>
Transport and Placement Onsite Landfill		11,906	CY	\$7.79	\$92,748	<b>(Revised 10.31.10)</b>
SUBTOTAL					\$168,827	
ACM, Universal Waste, Haz Waste & Liquid Waste T&D						
ACM Disposal		560	CY	\$29.42	\$16,475	<b>Added Scope (Revised 10.31.10)</b>
Universal Waste Disposal		70	DRM	\$588.50	\$41,195	<b>Added Scope (Revised 10.31.10)</b>
Hazardous Waste Disposal		150	TN	\$331.52	\$49,728	<b>Added Scope (Revised 10.31.10)</b>
Liquid Waste (decon, contact water)		60,000	GAL	\$1.32	\$79,200	<b>Added Scope (Revised 10.31.10)</b>
SUBTOTAL					\$186,598	
Subcontractor General Conditions		7.5%			\$275,761	<b>RSMeans (Revised 10.31.10)</b>
SUBCONTRACT SUBTOTAL					\$3,952,577	
Subcontract Contingency		15%			\$592,887	10% Scope +5% Bid (note: bid contingency lowered due to availability of 2 bids, PM, RD, CM of Building Demo already included in bid costs)
SUBCONTRACT TOTAL					\$4,545,464	
Contractor G&A		13%			\$590,910	
Home Office Project Management/Procurement		6%			\$272,728	
Construction Management		8%			\$363,637	
Contractor Fee		5%			\$288,637	
Program Support		2%			\$115,455	
PL Insurance		0.4108%			\$25,374	
SUBTOTAL					\$1,656,741	
TOTAL CAPITAL COST (2011 Dollars)					\$6,202,205	
Note						Revised January 25, 2011 2011 Dollars, Additional Scope.

The enclosed Engineer's Estimate is only an estimate of possible construction costs for budgeting purposes. This estimate is limited to the conditions existing at its issuance and is not a guaranty of actual price or cost. Uncertain market conditions such as, but not limited to: local labor or contractor availability, wages, other work, material market fluctuations, price escalations force majeure events, and developing bidding conditions etc may affect the accuracy of this estimate. CH2M Hill is not responsible for any variance from this estimate or actual prices and conditions obtained. The estimated value for scrap metals has not been included in this estimate.

**Note:** This estimate is classified as a Class 1 having an expected accuracy range of +15% to -10% of the stated total capital cost.